APPENDIX D. WIND TURBINE GENERATOR SPECIFICATIONS

APPENDIX E. 2012 MI'KMAQ ECOLOGICAL KNOWLEDGE STUDY

Anaia Global Renewable Energies
Wedgeport Wind Farm Project

Mi’kmaq Ecological Knowledge Study

Membertou Geomatics Solutions

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Executive Summary

This Mi'kmaq Ecological Knowledge Study, also commonly referred to as a MEKS or a TEKS, was developed by Membertou Geomatics Solutions on behalf of Anaia Global Renewable Energies for their proposed development of a wind farm located near Wedgeport in Yarmouth County, Nova Scotia.

This MEKS mandate is to consider land and water areas in which the proposed project will utilize, and to identify what Mi'kmaq traditional use activities that have, or is currently, occurring within, and what Mi'kmaq ecological knowledge presently exists in regards to the area. In order to ensure accountability and ethic responsibility of this MEKS, the MEKS development has adhered to the "Mi'kmaq Ecological Knowledge Protocol". This protocol is a document that has been established by the Assembly of Nova Scotia Mi'kmaq Chiefs, which speaks to the process, procedures and results that are expected of a MEKS.

The Mi'kmaq Ecological Knowledge Study consisted of two major components:

- **Mi'kmaq Traditional Land and Resource Use Activities**, both past and present,
- A **Mi'kmaq Significance Species Analysis**, considering the resources that are important to Mi'kmaq use.

The Mi'kmaq Traditional Land and Resource Use Activities component utilized interviews as the key source of information regarding Mi'kmaq use in the Project Site and Study Area. The Project Site covers an area 2-5 km south-west of Wedgeport for the proposed wind turbines, as well as the proposed transmission line that will extend to Tusket Falls. The Study Area is defined as an area within 5 km of the Project Site, which encompasses the areas of Wedgeport, Comeaus Hill, Central Chebogue, Arcadia, Yarmouth Reserve, Summerville, Raynardton, Tusket, Tusket Falls, and Bellville.

Numerous interviews were undertaken by the MEKS Team with Mi'kmaq hunters, fishers, and plant gatherers, who shared with the team the details of their knowledge of traditional use activities. The interviews were undertaken during December 2011. These informants were shown topographical maps of the Project Site and Study Area and then asked to identify where they undertake their activities as well as to identify where and what activities were undertaken by other Mi'kmaq. All interviews were voice recorded, where permitted, for the sole purpose of data verification during the analysis to collected information. Also, if allowed by the informant, their information was incorporated into the GIS data. These interviews allowed the team to develop a collection of data that reflected the most recent Mi'kmaq traditional use in this area. All interviewee's names are kept confidential and will not be released by MGS as part of a consent agreement between MGS and the interviewee to ensure confidentiality.

The data gathered was also considered in regards to Mi'kmaq Significance. Each species identified was analyzed by considering their use as food/sustenance resources, medicinal/ceremonial plant resources and art/tools resources. These resources were also considered for their availability or abundance in the areas listed above, and their availability in areas adjacent or in other areas outside of these areas, their use, and their importance, with regards to the Mi'kmaq.

This Mi'kmaq Ecological Knowledge Study has also gathered, documented and analyzed the traditional use activities that have been occurring within the Project Site and Study Area, by undertaking interviews with individuals who practice traditional use or know of traditional use activities within these areas and reside in the nearby Mi'kmaq communities.

Project Site

Based on the data documentation and analysis, it was found that the Mi'kmaq have historically undertaken some traditional use activities, primarily fishing, in the Project Site (or adjacent to), and that this practice continues to occur today.

Study Area

Based on the data documentation and analysis, it was concluded that the Mi'kmaq have historically undertaken traditional use activities in the Study Area, and these practices continues to occur today. These activities primarily involve the harvesting of fish species, but also include plants and animals; all of which occurs in varying locations throughout the Study Area and at varying times of the year.

Lobster was found to be the most fished species in the Study Area. This fishery was found to be occurring into the Atlantic Ocean, but also in coastal areas, and the major rivers, such as the Tusket River, and Chebogue River. Another species of fish noted by multiple informants is **trout**.

Rabbits were found to the most hunted species, with **deer**, **partridge**, and **pheasant** being mentioned multiple times, as well.

For gathering activities, berry picking was mentioned by informants many times as occurring primarily in the areas surrounding Yarmouth Reserve and Arcadia. Specifically, **blueberries** were brought up the most, followed by **raspberries**, and **blackberries**.

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1.0 INTRODUCTION

1.1 Membertou Geomatics Solutions

Membertou Geomatics Solutions (MGS) is a Membertou First Nation Company that was developed as a result of the 2002 Supreme Court Marshall Decision. MGS was established as a commercially viable company that could provide expertise in the field of GIS Services, Data Base Development, Land Use Planning Services and Mi'kmaq Ecological Knowledge Studies. It is one of many companies established by the Membertou First Nation – Membertou Corporate Division and these companies provide employment opportunities for aboriginal persons and contribute to Membertou's efforts of growth and development. As well, Membertou's excellent management and accountability of their operations is further enhanced by their ISO 9001:2008 certification.

For the development of this MEKS for Anaia Global Renewable Energies, MGS brings to the table a team whose expertise and skills with land documentation have developed a sound Mi'kmaq Ecological Knowledge Study. The team skills include expertise within the area of historical Mi'kmaq research, GIS data analysis, Mi'kmaq environmental knowledge and sound Mi'kmaq community connections.

1.2 Wedgeport Wind Farm Project

The Wedgeport Wind Farm Project would be located in the south shore of the Yarmouth County, in the district of Argyle. The goal is to develop a Wind Farm between 36Mw and 54 MW of nameplate power, although this will depend on the available grid capacity of the electric system. The estimated yearly generation would be circa 128,000 MWh (128 GWh).

Map of proposed Wedgeport Wind Farm Project.

2.0 MI'KMAQ ECOLOGOCAL KNOWLEDGE STUDY SCOPE & OBJECTIVES

2.1 Mi'kmaq Ecological Knowledge

The Mi'kmaq people have a long-existing, unique and special relationship with the land and its resources, which involves the harvesting of resources, the conservation of resources and spiritual ideologies. This relationship is intimate in its overall character, as it has involved collective and individual harvesting of the resources for various purposes, be it sustenance, medicinal, ceremonial and/or conservation. This endearing relationship has allowed the Mi'kmaq to accumulate generations of ecological information and this knowledge is maintained by the Mi'kmaq people and has been passed on from generation to generation, youth to elder, ***kisaku kinutemuatel mijuijij***.

The assortment of Mi'kmaq Ecological Information which is held by various Mi'kmaq individuals is the focus of Mi'kmaq Ecological Knowledge Studies (MEKS), also commonly referred to as Traditional Ecological Knowledge Studies (TEKS). When conducting a MEKS, ecological information regarding Mi'kmaq/Aboriginal use of specific lands, waters, and their resources are identified and documented by the project team.

Characteristically, MEKS have some similar components to that of an Environmental Impact Assessment; yet differ in many ways as well. Among its' purpose, Environmental Assessments seek to measure the impact of developmental activity on the environment and its' resources. This is often done by prioritizing significant effects of project activities in accordance with resource legislation, such as *Species at Risk.* Mi'kmaq Ecological Knowledge Studies are also concerned with the impacts of developmental activities on the land and its' resources, but MEKS do so in context of the land and resource practices and knowledge of the Mi'kmaq people. This is extremely important to be identified

when developing an environmental presentation of the Study Area as Mi'kmaq use of the land, waters and their resources differs from that of non Mi'kmaq. Thus, the MEKS provides ecological data which is significant to Mi'kmaq society and may add to the ecological understandings of the Study Area.

2.2 Mi'kmaq Ecological Knowledge Study Mandate

Membertou Geomatics Solutions was awarded the contract to undertake a Mi'kmaq Ecological Knowledge Study (MEKS) for Anaia Global Renewable Energies, with regards to the proposed Wedgeport Wind Farm Project. This project will require the documentation of key environmental information in regards to the project activities and its possible impacts on the water, land and the resources located here. The MEKS must be prepared as per the **Mi'kmaq Ecological Knowledge Study Protocol** ratified by the Assembly of Nova Scotia Mi'kmaq Chiefs on November 22, 2007.

MGS proposed to assist with the gathering of necessary data by developing an MEKS which will identify Mi'kmaq traditional land use activity within the Wedgeport Wind Farm Project (Project Site) and in surrounding areas within 10 kilometers of the project site (Study Area). The proposed MEKS would identify, gather, and document the collective body of ecological knowledge which is held by individual Mi'kmaq people. The information gathered by the MEKS team is documented within this report and presents a thorough and accurate understanding of the Mi'kmaq peoples land and resource use within the Project Site/Study Area.

MGS understands that this study will be included in the screen-level Environmental Assessment under the Canadian Environmental Assessment Act (CEAA) that will be submitted to the regulators by Anaia Global Renewable Energies, and will be used as a primary indicator identifying Mi'kmaq traditional land and resource use within the Study Area.

However***, it must be stated that this MEKS is not intended to be used for Consultation purposes by government and/or companies or to replace any Consultation process that may be required or established in regards to Aboriginal people. As well, this report cannot be used for the justification of the Infringement of S.35 Aboriginal Rights that may arise from the project.***

2.3 Mi'kmaq Ecological Knowledge Study Scope & Objective

This MEKS will identify Mi'kmaq ecological information regarding Mi'kmaq traditional land, water and resource use within the Project Site/Study Area. The data that the study will gather and document will include use from both the past and present time frame. The final MEKS report may also provide information that will identify where the proposed project activities may impact the traditional land and resource of the Mi'kmaq. If such, possible impact occurrences are identified by the MEKS then the study will also provide recommendations that should be undertaken by the proponent. As well, if the MEKS identifies any possible infringements with respect to Mi'kmaq constitutional rights, the MEKS will provide recommendations on necessary steps to initiate formal consultation with the Mi'kmaq. Finally, through the development of this MEKS for Anaia Global Renewable Energies, Mi'kmaq ecological knowledge and traditional land, water and resource use will be identified for those parties that are considering the Wedgeport Wind Farm Project.

2.4 MEKS Study Area

This MEKS will focus on the turbine locations, as well as the proposed transmission line up to Tusket Falls, referred as the Project Site.

Project site (green circles) and Study Area (Purple highlight)

The MEKS will also include an analysis in the adjacent Study Area. The Study Area is the areas within a 5 kilometer diameter of the Project Site which encompasses Wedgeport, Comeaus Hill, Central Chebogue, Arcadia, Yarmouth Reserve, Summerville, Raynardton, Tusket, Tusket Falls, and Bellville.

3.0 METHODOLOGY

3.1 Interviews

As a first step to gathering traditional use data, the MEKS team initiated dialogue and correspondence the Mi'kmaq communities of Acadia, Bear River, Gold River, and Wildcat. Discussions occurred regarding the identity of individuals who undertake traditional land use activities or those who are knowledgeable of the land and resources and an initial list of key people was developed by the team. These individuals were then contacted by the MEKS team members and interviews were scheduled.

For this MEKS, fifteen (15) interviews were undertaken by the project interviewers and thirty one (31) individuals provided information with regards to past and present traditional use activities. Interviewees resided within or were from the communities of Acadia, Bear River, Gold River, or Wildcat. All of the interviews that were completed following the procedures identified within the Mi'kmaq Ecological Knowledge Protocol (MEKP) document. Prior to each interview, interviewees were provided information about the MEKS including the purpose and use of the MEKS; the non-disclosure of their personal information and the future use of the traditional use information they provided.

Interviewees were asked to sign a consent form, providing permission for MGS to utilize their interview information within this MEKS. During each interview, individuals were provided maps of the Project Site/Study Area and asked various questions regarding Mi'kmaq use activities, including where they undertook their activities or where they knew of activities by others. When they did such activities or when activities they knew of were done, and what type of resource they utilized or were aware of. Interviews were audio recorded, when permission was granted by the interviewee. This assisted with the data accuracy checks and allowed for a comparison of audio data with the information documented on the

maps, providing further assurance to the accuracy of the information gathered. Also, when required, interviews were conducted in the Mi'kmaq language.

3.2 Literature and Archival Research

With regards to this MEKS, various archival documents, maps, oral histories and published works were reviewed in order to obtain accurate information regarding the past or present Mi'kmaq use or occupation relevant to the Project Site/Study Area. A complete listing of the documents that were referenced is outlined within the *Sources* section.

3.3 Field Sampling

Site visits to the Project Site were undertaken by the MEKS project manager, a member of Membertou Natural Resources and guided by a Mi'kmaq ecological knowledge holder, and took place over a period of three days in early November, 2011. The site visits consisted of a walkthrough of the Project Site, noting and identifying any particular species in the area, plant and animal habitats, or other land/water features or areas that would be of importance to the Mi'kmaq.

Plant species of golden thread, juniper, labrador tea, bayberry, blackberry, partridgeberry, bunchberry, snowberry, high busy blueberry, tamarack, white and black spruce, alder, maple, mountain ash and balsam fir were found throughout the Project Site.

Habitat areas and signs of Porcupine, Rabbit and Deer were located in various locations within the project site.

Porcupine identified within the project site

4.0 MI'KMAQ LAND, WATER AND RESOURCE USE

4.1 Overview

The Mi'kmaq Land, Water and Resource Use Activities component of the MEKS provides relevant data and analysis in regards to Mi'kmaq traditional use activities that are occurring or have occurred within the Study Area. It identifies what type of traditional use activities are occurring, it provides the general areas where activities are taking place and it presents an analysis regarding the significance of the resource and the activity as well.

The Mi'kmaq traditional use activities information that is provided by interviewees is considered both in terms of "Time Periods" and in regards to the "Type of Use" that the resource is being utilized. The Time Periods that the MEKS team differentiates traditional use activities by are as follows:

"Present" – a time period within the last 10 years
"Recent Past" – a time period from the last 11 – 25 years ago
"Historic Past" – a time period previous to 25 years past

The "Type of Use" categories include spiritual use, and sustenance use, such as fishing, hunting or medicinal gathering activities.

Finally, the study analyzes the traditional use data in consideration of the type of land and resource use activities and the resource that is being accessed. This is the Mi'kmaq Significant Species Analysis, an analysis which ascertains whether a species may be extremely significant to Mi'kmaq use alone and if a loss of the resource was to occur through project activities, would the loss be unrecoverable and prevent Mi'kmaq use in the future. This component is significant to the study as it provides details as to Mi'kmaq use activities that must be considered within the environmental understanding of the Project Site and Study Area.

By analyzing the traditional use data with these variables, the MEKS thoroughly documents Mi'kmaq traditional use of the land and resources in a manner that allows a detailed understanding of potential effects of project activities on Mi'kmaq traditional use activities and resources.

4.2 Limitations

By undertaking documentation research and interviews with Mi'kmaq traditional activity users, this study has identified Mi'kmaq Traditional Use activities that have occurred or continue to occur in the Study Area and Project Site. This has allowed the study to identify traditional use activities in a manner that the MEKS team believes is complete and thorough, as required by the MEKP. Historical documents within public institutions were accessed and reviewed and individuals from the Mi'kmaq communities of Acadia, Bear River, Gold River, and Wildcat were interviewed. The interviews were undertaken with key Mi'kmaq community people, identified initially by the MEKS team, who are involved and are knowledgeable regarding traditional use activities. Through the documentation review and the interview process, the MEKS team is confident that this MEKS has identified an accurate and sufficient amount of data to properly reflect the traditional use activities that are occurring in the Study Area.

The MEKS process is highly dependent on the information that is provided to the team. Because only some of the Mi'kmaq traditional activity users and not all Mi'kmaq traditional activity users are interviewed, there is always the possibility that some traditional use activities may not have been identified by the MEKS.

4.3 Historical Review Findings

The following Historical Review is a collection of source materials found to be relevant to the Native culture and history of the Atlantic Region as well as the Project Area. There is very little original research on the part of Membertou

Geomatics Solutions but rather is a review and compilation of relevant secondary sources.

The Project Study Area encompasses an area located on a promontory of land approximately 12km southeast of Yarmouth and 2 km west of Wedgeport. The promontory rises roughly 25m above the sea topped by 2 high points of up to 50m in elevation and extends 7km into the Gulf of Maine. The waters of Goose Bay are on the lower east side shore of the promontory with the Tusket River on the upper east side shore and Little River flowing into Little River Harbour on the west side shore. Big Tusket Island is just 2km south off the promontory point and numerous smaller island clustered to the east of Big Tusket Island with the farthest being approximately 9km offshore of the promontory point.

The promontory is a portion of the Tusket Islands Region 830 of the Atlantic Coast as designated by the Natural History of Nova Scotia. The Tusket Island Region is largely a landscape of parallel ridges forming long promontories and deep inlets and bays with numerous islands formed as rising sea levels submerged these ridges over time. (1)

The Land

Geologically, the promontory with the project site location is actually an isolated outcrop of Granite within an area predominantly underlain by slate bedrock. The prevalent band of slate bedrock begins offshore and stretches inland from the coast to Tobeactic Lake, Queens Co. as the Northeast limit, Wallubec River, Yarmouth Co. as the mid width limit and the area of Easton, as the Northwest limit. The width of this band along the present coastline stretches from Chebougue Point to approximately Lower Argyle. This band of slate is comprised of sandstone turbidities (layered bands) formed by successive undersea avalanches some 550 to 560Ma ago and was superheated by underlying molten rock and metamorphosed into slate, greywacke and gneiss in some areas. (2)

The underlying molten rock intruded into the older sandstones and slates above in some areas and cooled to form the monzogranite bedrock underlying the project site and promontory some 515Ma ago. The extent of this outcrop of monzogranite also begins offshore with the cluster of islands west of Big Tusket Island as well as Pinkneys Point, Cook Island and Calf Island with the northern limit extending across the promontory to Upper Wedgeport and Wedgeport Cape. (2)

The presence of monzogranite underlying the project site maybe significant in that Monzogranites can contain crystalized minerals such as ilmenite, sphene, apatite and zircon which range in hardness on the Mohs Scale of 5.0 for Apatite to 7.5 for Zircon compared to Talc and Gypsum that rate 1.0 and 2.0 and Diamonds that rate 10.0 on the same Mohs Scale. This particular outcrop also may contain tin, copper, lead and Zinc where the copper and the crystalized minerals would be collectables for decoration and utility. (2)

The predominant presence of sedimentary rock and slates in the Tusket Islands Region provides an abundance of sediment material that formed large areas of tidal marsh in the bays and inlets as well as beaches in the coves of the headlands and islands. (1)

The parallel ridged topography of the Tusket Islands Region were exposed by weathering of the surrounding softer rocks over time but particularly over the last 75 thousand years by successive periods of glaciation. Glaciers form when the rate of snow accumulation exceeds the amount of melting. Periods of low average temperatures and cold micro climates created by the glaciers themselves contribute to accumulation and growth. Growth has the flow characteristics of a very slow landslide that follows slopes and paths of least resistance. Glaciers take about 30,000 years to form and when average temperature increases and snow accumulation is less than snow loss, glaciation ceases and the ice sheets begin to recede at 4 times the rate of their formation. *(11)*

The Ice

Evidence from deep-ocean sediments indicate that there have been at least 16 glacial periods that lasted approximately 100 thousand years each. The last glacial period was the Wisconsin Glaciation which began 75 thousand years ago and ended between 12 and 10 thousand years ago. During this period glaciers both crossed over and formed within the province while being fed by the high amounts of precipitation in the region. (3) Since the 1800's glacial theory for the Atlantic region consisted of two hypothesis with one being a large continental sheet centered near Hudson Bay and Quebec and the other being local confined ice sheets. Recently after extensive sampling in Nova Scotia, evidence indicates that successive glaciation had four distinct phases with different and shifting ice centers. (3)

The Phase 1 ice flows moved eastward across the region including Prince Edward Island and Cape Breton Island before shifting flow direction southeastward across the present day Bay of Fundy, Mainland Nova Scotia and Cape Breton Island. The Ice flow across the project site in this phase was also eastward and then at some time shifted to a southeast flow direction. (3)

The Phase 2 ice center was located north of present day Prince Edward Island with flow direction south over mainland Nova Scotia and southeast over lower southeast portions of Cape Breton Island. The southward ice flow direction of Phase 2 was parallel to the ridges or folds in the slate bedrock of the Tusket Islands Region. Softer areas were scoured by out by the ice sheet leaving elevated ridges of harder bedrock including the erosion resistant Monzogranite promontory of the project area.

The Phase 3 ice centre was parallel to the present day Nova Scotia Atlantic Coast and extended on land from Cape Sable, through Cape Canso to offshore and approximately south of present day Louisbourg, Cape Breton Island. From this ice

divide, ice flows moved northeast across eastern portions of Cape Breton Island, northwest across western portions of Cape Breton Island, northeast across northern portions of the mainland from Cape George to Minas Basin west to northwest across the present day Annapolis Valley and Digby Neck. On the Atlantic side of the ice divide, all flow directions were in a southeast direction over the Scotia Shelf. Ice sheet flow direction over the project site during this phase in indeterminate as the ice divide southern limits terminated approximately in the area of the project site. (3)

Phase 4 was a period when several remnant ice sheets were located throughout the province and advanced and receded in a radial direction from the ice centers. Cape Breton had two glaciers that were centered on the Highlands and another centered on the Bas d'Or Lakes. The Chedabucto Glacier filled the present day Chedabucto Bay and St. Georges Bay with a westward ice flow direction across the central portion the province into the Northumberland Strait, Minas Basin and the Atlantic. The Chignecto Glacier was centered near Baie Verte and Cape Tormentine and the South Mountain Ice Cap was centered between the Bay of Fundy and Atlantic Coast near present day Kejimkujik National Park. The radial ice sheet flow direction of the South Mountain Ice Cap would indicate a south to southwest flow direction over the project site. (3)

The last of the glaciers gradually receded with the Bay of Fundy being ice free between 16 and 14 thousand years ago. Northern portions of the province experienced periodic advancement and stalls in movement of a remnant ice cap centered near the Antigonish Highlands approximately 15 thousand years ago. The flow direction was westward into lowlands and southwestward to offshore of present day Sheet Harbour. By 13 thousand years ago the ice sheets had receded to the approximate coastline of today and then only residual ice caps remained in highland areas at approximately 12 thousand years ago. (3)

Between 11 and 10 thousand years ago there was an abrupt climate change with a cold period lasting approximately 200 years known as the Younger Dryas. During the Younger Dryas Period previously colonized plants that followed the receding glaciers were covered in permanent snowfields and some large mammals became extinct. (5)

As the last remnant glaciers receded and the climate warmed again, the landscape was colonized by tundra vegetation of willow shrubs and herbaceous plants between 10 and 7.5 thousand years ago to be replaced boreal vegetation such as fir, spruce and birch until 6 thousand years ago when pine and oak was prominent. (4) Temperatures were 2 degree Celsius warmer than today for period until 4 thousand years ago and forests of hemlock mixed with beech and maple was the dominant vegetation. Gradual cooling to present day temperatures and increased moisture favoured spruce forests. (5)

It is also theorized that a terrestrial refuge for plants and animals existed near the edge of the continental shelf where arctic and boreal species survived the last ice age and eventually repopulated the newly exposed mainland as the ice sheets receded and before the sea level rise. However, since the end of the last ice age the Chignecto Isthmus provided the land corridor for plants and animals to migrate into Nova Scotia as well as assisted airborne species migrations. (6)

People on the Land

Archaeologists and researchers frequently disagree on the relationships between the cultural groups that appeared and disappeared from the landscape over the last 12,000 years and how those previous groups relate to the present day Mi’kmaq and Maliseet. Much of the archaeological record found to date is the decay resistant stone tools, cookware and ornamentation. The artifacts found have a consistency in style and manufacture over long periods with sudden disappearance of old styles and techniques and the appearance of new and different styles and

manufacturing methods. The tools styles together with carbon dating, archeologists and researchers can create time periods and approximate distribution and movement of peoples or cultural groups. Disagreement is found among those who theorize that earlier peoples were displaced, moved on, or just disappeared from areas and those who theorize that these peoples stayed and adapted to the changing landscape and animal species available. Through an early network of trade these peoples quickly adopted technological changes, stylizations and ideas. *(27)*

At the foot of the south slopes of the Cobequid Mountains at present day Debert is found the earliest evidence of peoples populating Mainland Nova Scotia. The Debert Site is located on top of a sandy knoll south of the Cobequid Mountains and was occupied approximately 11 thousand years ago by Paleo-Indian peoples. The campsite overlooked a caribou migration route through the Cobequid Mountains to what would have been tundra plain leading into present day Cobequid Bay. The cold period of the Younger Dryas may have pushed the Paleo-Indian people south with advancing ice sheets and permanent snowfields or they may have abandoned the region. (7)

Archaeological evidence is scarce for a period of 10 to 5 thousand years ago which is thought to be due to the rise in sea levels that submerged former coastal sites. (7) Sea level rise on the Atlantic Coast was a combination of land rebound after ice sheets receded, rising ocean temperatures and water released by melting glaciers. *(31)* As the thick and heavy ice sheet centers depressed the earth's mantle, the areas of mantel along the ice sheet margins were less weighted by ice and rose slightly through displacement. There was an ice sheet center located in the Gulf of St Lawrence. As the weight of the ice sheets diminished with melting the depressed center areas rebounded and rose in elevation while the mantel of the former ice margin areas lowered in elevation. *(32)*

The Archaic Period covers a time of 9 to 2.5 thousand years BP and is further sub divided into a periods of 5 to 3.5 thousand years BP referred to as the Maritime Archaic Period and 3.5 to 2.5 thousand years BP which was a period of Susquehanna cultural influence indicated by the artifacts found within archaeological sites. (7)(8) Tool manufacture techniques and materials indicate a connection between Archaic Period peoples within western Nova Scotia to the Susquehanna Tradition Culture (3500-2500 BP) which was centered in present day Mid-Atlantic States. (7)

While sources available do not include recent artifact finds on the once temporarily drained banks of the former Mersey River, the Archaic artifacts found within an area between Digby Neck, Milton, Queens Co. and inland to Lake Rossignol and the Medway River include: (9)

Digby Neck Sites	2 Ulus
Salmon River	2 Gouges, 2 Plummets
Eel Lake	1 Gouges, 1 Ulu, 1 Rod
Barren Lake Sites	7 Bayonets, 1 Gouge, 1 Ulu, 1 Plummet
Cape Sable Island	1 Plummet
Roseway River	2 Gouges
Ohio River	1 Axe,
Lake Rossignol Sites	6 Bayonets, 1 Axe, 13 Gouges, 1 Rod, 1 Plummet
Indian Gardens	6 Bayonets, 9 Axes, 10 Gouges, 3 Ulus, 7 Plummets
Medway River	1 Bayonet, 1 Gouge
Milton	1 Bayonet, 1 Gouge
Tusket Falls	2 points (46)

The Mersey River has long been a travel route from the Atlantic Coast to the Bay of Fundy. Recent finds of stone tools and points along the length of the river give evidence of at least 5000 years of travelling the route and some trace evidence indicate a possible occupation dated 9000 years. (47)

In 1988, the Bain Site was discovered on the Cheggogin River, Yarmouth Co. and is thought to be an Archaic site and second oldest site to Debert. Initial analysis at the time of discovery indicated the Indian village was occupied 4000 years ago. (48) Artifacts collected from hearths were submitted for carbon dating and results indicate that the artifacts have a Normalized Age ranging from 910 to 2030 yrs. (49). Other artifacts found at the site may be older but further information on the Bain Site was not readily available to this review.

Other relevant archaeological finds include the submerged finds offshore in the Bay of Fundy and Gulf of Maine. Sea levels at the end of the last ice age were determined to be 45m above present levels due to the mantel depression and rebound explained earlier. Sea levels then lowered to approximately 60m below present levels at 9500 years Before Present and have been rising since that time with the majority of the rise occurring in the first 6000 years. (51)

During these long periods of fluctuating sea levels the coastline would have moved further inshore and later moved offshore for a brief period and has been moving inshore for the past 9500 years. At various periods during the coastline migration, early peoples would have lived along these coasts. The following submerged archaeological evidence has been recovered by fishing boats and research vessels:

Off Georges Bank	Mammoth Bone (12270 years Normalized Age) (50)
Eastern Blue Hill Bay	1 Biface, 1 Plummet (Late Paleo-Indian and Early to Middle Archaic) (51)
Off Mount Desert Island	3 Bifaces, 3 Plummets (51)
Off Deer Island, Maine	Site, Biface fragments, 1 Ulus, 1 Adze (Middle-Early-Late Archaic) (51)
Passamaquoddy Bay	2 Ulus (51)
Off Indian Island, Maine	1 Gouge (Archaic) (51)

The Period of 2.5 to 0.5 thousand years BP is referred to as the Ceramic Period or Maritime Woodland Period that saw the introduction of pottery and burial mounds in Nova Scotia. (7)(8) Coastal Maritime Woodland Period sites were not as impacted by rising sea levels as earlier periods but are currently impacted by coastal erosion of the glacial tills by successive storms and constant wave action.

Woodland sites found within Yarmouth and Shelburne County includes:

Bunker Island Site	Shell Midden (44)
Harris Lake	Unknown to this review (45)
Tusket Falls	2 points (46)

In 1837 a spear point and hollow stone tubes were found in Dartmouth near the present day location of Admiralty Place. The hollow tube artifacts were later identified as Ohio pipestone and dated between 2,600 and 2,100 years ago and indicative of the trade network that existed between the early peoples of Northeast North America. *(29)* This type of find is associated with burials and a similar find at Whites Lake in the Prospect area was a burial site of the same tradition and period of the 1837 find. Laboratory analysis of charcoal determined that the Whites Lake Site dates between 2260 and 2440 years before present. *(30)* The site was discovered when it was disturbed by road construction. All remains were recorded and with the assistance of the Mi'kmaq Grand Council and the Mi'kmaq Association of Cultural Studies and the remains were reburied and the site protected. *(29)*

The remains found within the Whites Lake burial site were determined to have been cremated near the burial mound and show evidence of high heat. The remains were then gathered and placed within the burial mound along with the burial artifacts that also show evidence of high heat exposure. *(30)*

The ritual associated with the burial mound found at Whites Lake differs from the burial ritual described by Nicholas Denys 339 years ago where Early Mi'kmaq burials were at common burial ground sites. The deceased was covered in a soft skin or beaver robe and bound with their legs against their chest and touching the chin. The hole was lined with fir and cedar boughs and gifts of weapons, snowshoes, utensils, beads and clothing to accompany them into the land of souls where previously deceased friends and family awaited. *(16)* The nature of early Mi'kmaq was to compete for the best gift given and they gave the very best of what they had. The quality of the gifts was such that they sometimes deprived themselves of the necessities for survival. *(16)*

Mi'kmaq Spirituality

Mi'kmaq Spirituality (Mi'kmaq Ktlamsitasuti) belief is that all life is created by Kij-Niskam, an all-powerful being. All living things have a spirit that is to be respected. *(14)*

Mi'kmaq lived and died in the world as they found it without making attempts to change the natural order to suit the Mi'kmaq. Mi'kmaq are part of an interdependent system where everything be it animate or inanimate, has its proper place. Fear was ever present as to not offend spirits and fear of a death at the whim of unknown power. The greatest fear was to upset the natural order intentionally or accidently. Taboos help maintain the balance with nature. Fur bearing animals were subject to many Mi'kmaq rituals to ensure return of game. No such rituals apply to fish as fish are considered a gift for the taking. *(22)*

Mi'kmaq imagine the beginnings of all life and their stories explained the elemental forces of nature as well as explaining why animals look and act as they do. Since all they possess and eat is provided by the living things that they know so well that Mi'kmaq had a great respect for life and thought of these living things as entities that they could communicate with. *(26)*

Mi'kmaq stories and oral traditions are an efficient way to pass on to future generations important information through stories or teachings of the Mi'kmaq past, customs and where the Mi'kmaq fit into the world. Mi'kmaq stories are circular with no beginning, middle and end. Mi'kmaq circular stories can focus on certain aspects for days. *(24)*

The following story interestingly describes a period of flooding and receding that almost parallels the post glacial period of fluctuating sea levels. The Mi'kmaq speak of a great flood that covered all the land with water and one man and women saved themselves by canoe. When the rains stopped, a beaver wished to build an island but drowned before he was finished. A muskrat took over the job and built an island where the man and woman landed. Day by day the water receded making the island larger and larger until it formed the land that is seen today. *(23)*

Mi'kmaq believe that different peoples descended from different ancestors and that the Mi'kmaq origins are within the region of Mi'kmaq traditional territory. *(20)* Kij-Niskam created Klu'scap with divine powers to live among the Mi'kmaq and he taught them all they needed to survive. *(19)*

At the time of arrival of Europeans, Klu'scap spent his last winter with the Mi'kmaq at Cape d'or explaining that because of the arrival of the white men he must leave for his home in the far west and promised to return when the Mi'kmaq needed him. *(20)*

Klu'scap had prophesied a great war and a vision of an Elder Chief of LaHave warned that involvement with the European Monarchs must be avoided at all costs. The vision inspired Grand Chief Membertou in 1610 to propose a solution that the Mi'kmaq unite with the Holy Roman Empire through baptism for

protection from the Monarchs and to maintain their independence and lifestyle. *(25)*

Mi'kmaq are generally still faithful to that union and the identifiable spiritual groups in the Mi'kmaq community today are the Traditionalists, Catholics and Catholic-Traditionalists. The Traditionalist group is a general collection of varying degrees of Traditionalism where a person may perceive pre-contact Mi'kmaq beliefs only as traditional or those who may culture Mi'kmaq identity in traditional practices and while maintaining Catholicism as their main spiritual belief. However Neo-Traditionalists practice pre-contact Mi'kmaq beliefs ceremonies that particularly distinguish themselves from Catholicism. Those considered Catholics do not consider themselves as traditionalist but as Christians. However, even the Catholic Christians of the community incorporate a little Mi'kmaq Traditionalism in their beliefs and practices. Catholic Traditionalists allow even more room in their beliefs for both Traditional and Catholic affiliations and practices. Traditional Christian beliefs and ceremonies are infused with Mi' kmaq traditional concepts and ceremonial practices. *(26)*

Contact

The earliest European interests in explorations of North America were inspired by mythical legends of Atlantis, the Islands of Brazil and the Island of Seven Cities. All these mythical legends pointed to the presence of a new world west of England and France that contained an abundance of riches and gold. (52)

Pre-Columbus voyages by seamen and fishermen believed that the land they saw in the west was that of Tartaria but could not reach the shores due to storms. In the 13th and 14th centuries Tartaria was a large region of Eastern Europe and Asia that extended to the Pacific and controlled by the Mongols. Others referred to the land in the west as that of Bacallaos. Circa 1450, these beliefs and sailing

directions were noted by Christopher Colom (Columbus) as told to him by seamen of the Port of Santa Maria. (52)

While legends of riches and gold may have inspired explorers, rich fishing grounds inspired many unknown voyages to the new world. England was searching for new fishing grounds off the coast of Africa and also sailed west in search of fish and lands for a new fishing station. Other countries also had the same interest and records of successes and captains logbooks were closely guarded as to keep locations of any rich fishing grounds from competing fishermen and countries. (52)

By 1502 the fishery off the coasts of the new found land had been established and countries and captains had their preferred fishing areas and fishing stations. Ocean crossing became more common place as captains established their routes and landmarks. French records alone have 70 vessels travelling to the New World between 1523 and 1556. (52)

The Contact Period is of 500 to 100 years BP although Norse people visited the region as early as 1000 years BP and colonized the northern tip of Newfoundland. Portuguese and Basque fishermen were the first Europeans to establish continuous contact with the Mi'kmaq and began arriving 500 years BP. They arrived to find Mi'kmaq peoples inhabiting the thick forests of Nova Scotia as well as Western New Brunswick, Eastern Quebec, Prince Edward Island and Southern Newfoundland. (7)

The Florentine Explorer Verrazano was the leader of a French expedition that sailed to the coast of North America in 1524. It is thought that Verrazano reached the Carolina Coast and briefly sailed south before changing course just north of the Florida Coast and sailing north along the Atlantic Coast as far as the Strait of Belle Isle before returning to Europe. (52)

Verrazano made note of the Natives they encountered as they sailed north stopping occasionally to replenish water as well as meet and trade with the Natives. They found the Natives agreeable at 34 degrees north, which aligns with the approximate the location of Chesapeake Bay, and recorded his observations of the natives he met and how they lived. Verrazano continued north and was further impressed with the forested landscape and is thought to have sailed into Narragansett Bay, Rhode Island which he called “Refugio” and stayed for 15 days visiting with the friendly Natives which he detailed in his records. (52)

After leaving his “Refugio”, Verrazano sailed north around Cape Cod and entered the Gulf of Maine and along the coast of the land he described as the “Land of Bad People” at 43 2/3 Degrees North Latitude being the mouth of the Kennebec River. It is interesting that Verrazano noted the Natives he encountered here were “Different from the others” he previously encountered in the south. He described the Natives he encountered as “uncouth” with barbarous vices and no matter how hard he tried was unable to have any communication with them. Verrazano made many attempts to go ashore and trade with the natives but was warned off by the natives themselves and would only trade from high rocks by lowering cords into Verrazano’s small boats. The Natives offered no courtesy to Verrazano and when there was nothing left to trade Verrazano was sent off with contempt. Verrazano was so unimpressed that he recorded that there was no value to this land except the forests and some raw metals he had seen being worn by the Natives. (52)

Leaving the Gulf of Maine, Verrazano sailed across the entrance to the Bay of Fundy and sailed along the land that the “Bretons” had previously discovered at 50 Degrees north being the Strait of Bell Isle, before setting a course for France. (52)

The “Bretons” are mentioned again by Father Pierre Biard in 1614 as the original “discoverers of New France in 1504” based on earlier research he did prior to his own voyage to the New World. Biard also refers to “Acadie” being the

“Souriquoys Country” and further south across French Bay (Bay of Fundy) as “Norambegue” which he comments is no longer remembered although “Canada” is remembered from Cartier’s voyages in 1524 and 1534. (52)

A 1525 Spanish expedition lead by Spanish explorer Estevan Gomez sailed for the “northern parts” of the New World where he discovered and added new coastlines to previously explored areas of “Baccalaos”. On arrival to the Atlantic Coast of the New World, Gomez sailed to 40 and 41 degrees North Latitude in that order which placed him just south of Cape Cod before sailing north near the entrance of the Bay of Fundy before changing course south along the coast to Florida and South America. (52)

Gomez sailed up a deep river he called Deer River (Penobscot River) because of the large number of deer found in the area. He noted the number of islands in the river, bay and offshore which most were inhabited by natives fishing based on the number of fires visible at night. There is no mention of disagreeable Natives but rather a brief description of their appearance and some activities. Gomez continues to sail to 46 to 47 ½ Degrees North Latitude and makes note of Cape Breton and an island within Breton Bay called Isle St Jean which may be Prince Edward Island. (52)

The French exploration expedition of 1534 was led by Jacques Cartier and arrived in the new world at “cap de Bonne Viste” (northeast coast of Newfoundland) and stayed in the harbour of “saincte Katherine” for a ship refit and rest. (52)

Cartier sailed north for open water after their refit and then changed course for “bay de Chasteaulx” (Strait of Belle Isle) where upon entering the strait sailed along the southern coast of Labrador to “Blanc Sablon”. It was at “Blanc Sablon” that Cartier first encounter Natives and interestingly these Native informed him that they were not from this land but from a warmer climate and were there to hunt seals and gather other food for sustenance. These natives he described had

birch bark canoes, wore their hair tied up to the top of their heads twisted and interwoven with feathers and painted themselves in various tan colors. (52)

The source refers to “Brest” (Chevery Area?) where Cartier departed the Labrador Coast and sailed south to the northwestern shore of Newfoundland and followed the coast line to approximately Cape Anguille. Cartier left the coast of Newfoundland sailing west to the “Bryon Island” (Ile Brion), “cap du Dauphine” and “cap saint Pierre” (of Magdalen Island) and southwest to “cap d’Orleans” and “cap de Sauvaige” (of Prince Edward Island) where Cartier had seen Natives but no contact had been made. (52)

Cartier continued westward to the New Brunswick Eastern Coast which he followed north to “baye de Chaleur” which apparently looked promising as a passage through to the much sought Western Ocean. While exploring the Bay, Cartier saw approximately 50 canoes of natives crossing the bay and they gave all signs of encouragement for Cartier to land and trade with them. So eager to trade were the Natives (most likely Mi’kmaq) that warning cannon shots were required to keep their canoes away. The following day the Natives returned with gift offerings of food and an expressed desire to trade. Cartier found these people so agreeable that he commented that the Natives at this location would be prime candidates for “conversion to the Holy Faith”. (52)

Cartier followed the coastline further north and around the Gaspe’ Peninsula to Gaspe’ Bay where they took refuge from bad weather and for repairs. During their stay in Gaspe’ Bay approximately 300 natives arrived for Mackerel fishing and he noted that they were different from those he encountered several days earlier in Chaleur Bay. These peoples (most likely Mohawk-Iroquois or also known as Canadians) had their heads shave except a tuft at the top of the head and tied. Cartier also noted that these people claimed to be from upriver and travel to Gaspe’ Bay during fishing season. The Natives carried with them a large quantity of corn which grew upriver where they normally reside. (52)

Although Cartier found these Natives to be very agreeable, they were upset when Cartier erected his famous cross with shield at Gaspe' Bay in claiming the land for France. The Chief approached Cartier's ship and spoke at length in speeches at how this was their land and the cross was erected without his permission. Cartier's men quickly got the Chief and his two sons onboard to Native's surprise and Cartier assured them the cross for a landmark for when he would return with more goods to trade. Cartier also managed to convince or trick the Chief to allow his two sons accompany Cartier back to France and promised he would return with them on Cartier's next voyage to the New World.

Departing Gaspe' Bay, Cartier sailed northeast until reaching Anticosti Island and followed the coastline of the island, rounded the astern tip and continued to follow the coast until changing course to cross to the south shore of Labrador. While sailing eastward off the coast of Labrador which Cartier called "Cap Thiennot" where he could see smoke from fires onshore but could not land due to unfavorable winds. Fortunately Cartier met some of the Natives in canoes who were returning from the Strait of Belle Isle to their lands where Cartier had previously seen the smoke. The twelve natives surprised Cartier when they freely came aboard his ship and informed him that they were 'Chief Thiennot's People". Cartier sailed through the Strait of Belle Isle and set a course for Europe. (52)

Although far removed from the Gulf of Maine and coast of the Cape Sable Area of Southwest Nova Scotia, it is at Gaspe' Bay that Cartier first enters the world of the Iroquois. Cartier's first voyage also highlighted that fact that the Region was far from uninhabited but inhabited by several different peoples and cultures. On his second voyage he gives us the first glimpse of the warfare that existed between the many different Native Peoples of the North Eastern Region of North America. This is of relevance because of all the Mi'kmaq that inhabited this region throughout history, it would seem the Cape Sable Indians of southern Nova Scotia

were the most impacted by warfare among both Native peoples and Europeans. (52)

On Cartier's second Voyage he enters the Strait of Belle Isle and continues his exploration of the region guided by the two sons of the chief that he was returning as promised. He was guided into the mouth to the mouth of the great river of "Hochelaga" (St. Lawrence River) and the route to "Canada". Cartier continued up the river and passing four villages before reaching the "Isle d'Orleans" and the Village of Stadacona (Quebec) where he met Chief Donnacona, "Lord of Canada" as described in the records. (52)

Cartier was welcome on in his return to the New World and as he had met these people on his first voyage and he left some of his men at Statacona when he continued up the river in long boats to the Village of Hochelaga (Montreal) against Donnaconna's advice where he was also welcomed by the village Chief warned Cartier of the "Agojuda" (bad people) who lived up the Ottawa River and continually waged war. (52)

When Cartier returned to his men in Stadacona he found them in a defensive mode as Donnaconna's warm welcome had cooled since Cartier decided to fraternize with the other villages. It is at this time that Cartier is introduced to the nature of warfare among the Natives when Donnaconna presents the scalps (or faces) of 5 killed Toudamans with each stretched out on small hoops. Donnaconna said the Toudaman Territory was south of them and the Toudamans continually wage war against them. The killings were in revenge over a Toudaman attack on his people as they camped on an island located on the south shore of the St. Lawrence River, opposite the Saguenay River. (52)

Donnaconna's people were later credited by Champlain as the origin of the practice of scalping enemies. Although removal of defeated enemies' heads

occurred among the Tribes of early Acadia and New England, they did not practice scalping. (57)

The Toudamans Donnaconna spoke of are thought to be Eastern Algonquians of the Gaspe' Region as there was constant warfare between the Canada Iroquois and Gaspe' Mi'kmaq for the Honguedo Territory (Gaspe' Peninsula). The island where the Toudamans attacked Donnaconna's people is adjacent to the south shore of St. Lawrence River at end of a portage route (Trois Pistoles River) to the St. John River and Algonquian Mi'kmaq and Maliseet Territories. Opposite the island and on the north side of the St. Lawrence River is the mouth of the Saguenay River that was a route into Montagnais Algonquian Territory. (52)

During Cartier's winter stay he thought Donnaconna and his sons would be a hindrance to further explorations and relations with the other Canada villages and kidnapped Donnaconna and his sons as well as two other tribal leaders when they departed for Europe and removed the obstacles for future exploration. (52)

Cartier returned to Stadacona in 1541 and the interim Chief was informed of the death Donnaconna's and one of his sons while in France and that the surviving son was living like a king. The Chief was not too upset at learning he would remain as Chief but there would be a long lasting distrust between Iroquois and the French Cartier's actions at Stadacona. (52)

When Champlain visited the same region 68 years after Cartier, there were no sign of the decedents of Donnaconna's Canada tribe that Cartier had established relations. Cartier had recorded a dictionary of Donnaconna's Canada Iroquois language but in 1603 the French could not understand the current inhabitants and recognized that something had happened to the peoples that Cartier met. (52) It is thought they were driven out or wiped out sometime around 1580 to 1600 by more aggressive Iroquois from the present day New York State area who previously had no territorial access to the St. Lawrence River. (53)

The Canada Iroquois lived upriver on the St. Lawrence and practiced agriculture at the limits of the favorable climate for corn maize. The Canada Iroquois also had a strong connection to the lower St. Lawrence River and Gulf of St Lawrence where they seasonally travelled for fish and sea mammals. By the beginning of the 1600's Donnaconna's former marine culture was nonexistent and all tribes were focused on inland fur-bearing animals for the fur trade. (52)

It is not known what impact removing Chief Donnaconna and his heirs from the leadership of the Canada Natives and if this somehow weakened them in the eyes of their competitors and enemies.

Acadia

In 1604 Monsieur DeMonts had been granted rights to a territory between 40 and 46 degrees latitude which was roughly the known coast between points that would be later known as Philadelphia and Louisbourg. DeMonts separated boats landed at both Canso and LaHave. DeMonts continued south to Port Mouton and fearing being shipwrecked and marooned in the New World he anchored his ship and sent Champlain to further explore in a long boat with a crew of 10 and DeMont's Secretary. Champlain rounded the southern coast of Nova Scotia into Baie Stainte Marie (St. Marys Bay) and returned to report to DeMonts. They moved their larger ships to Baie Sainte Marie and eventually to St. Croix Island where they spent a disastrous winter losing 34 men of the 79 that wintered at St. Croix Island. In the spring of 1605, the Frenchmen move what they could from St. Croix Island to the Annapolis Basin which they had briefly visited the year before and then established Port Royal. (54)

The Annapolis basin was not unoccupied at the time of their decision to relocate there in 1605 but was the summer village of Mi'kmaq led by Sagamore named Membertou. They were met by several hundred Mi'kmaq and were permitted to

construct a small fort close to the Mi'kmaq village. The arrival of the "Jonas" with more Frenchmen and supplies was late and found Champlain and Pontgrave' were absent sailing for Canso to find supplies with the fishing boats there. Membertou canoed to and boarded the French vessel "Jonas" and greeted the French arrivals in broken French but all signs and gestures indicated a warm welcome. (56)

Onboard was attorney/historian Marc Lescarbot who recorded a wealth of information for future Historians. Lescarbot recorded that their Atlantic crossing brought them to Canso where he observed two Basque long-boat approaching with one of the boats crewed by Frenchmen from St. Marlo and the other boat crewed by Mi'kmaq. Through a long association with seasonal Basque Fishermen these Mi'kmaq had mastered sailing skills and Lescarbot noted that they spoke in a language that was "half Basque". They were informed that the Frenchmen at Port Royal were desperate for supplies and waiting for them. They sailed into the Bay of Fundy which its name may have originally derived from Portuguese "baia fonda" (deep bay). (56)

Upon their arrival at Port Royal Lescarbot begins his descriptions the Mi'kmaq village and its Sagamore Membertou. The village was dozens of conical Wigwams, several large lodges and one large lodge for public gatherings, all surrounded by high palisades. Membertou is described by Lescarbot as being an impressive character, taller than his fellow Mi'kmaq, full bearded and estimated to be in his fifties. Lescarbot recorded that Membertou's name or at least was referred to as "Maupeltuk" (cock who commands many). He led his people with just enough authority to "harangue, advise, lead them to war and render justice". Champlain said he had the reputation as the most treacherous of his people but a good warrior and leader and gracious host to the Frenchmen. In addition to his warrior skills Membertou was also a "buoin" (medicine man) and continued this practice among his people. (56)

Membertou made reference to Cartier's 1534 voyage which was confused by the Frenchmen as to mean he was present during Cartier's visit to the Mi'kmaq shores of the Gulf of St. Lawrence. This resulted in Membertou's age being recorded as being much older. (56)

In addition to permitting the French to build a fort in his territory, Membertou also granted Champlain permission to mine the metals the French were so fond of at "Mines" or "Minas" (56)

In the fall of 1604 and prior to the winter at St. Croix, Champlain had explored the Coast of Maine that was known to French fishermen as "Norembega" after a fabled country. Champlain sailed the Penobscot Bay, Mount Desert Island and to the mouth of the "Pemetigoet River" (Penobscot River). (54)

In the spring of 1605, Champlain continued his exploration of the Coast of "Norembega" or "Norumbega" and it was on this sail when he met or at least describes the Native inhabitants of the shores of what would be the known as the Gulf of Maine. Upon arrival at Saco Bay they encountered whom Champlain referred to as the "Armouchiquoise" or "Almouchiquoise". Champlain noted that the Armouchiquoise were different in language and culture than the Natives than the Natives he encountered further north as the Armouchiquoise practiced agriculture in maintaining garden plots of corn maize, beans, pumpkins and tobacco. (54)

The language of the "Armouchiquoise" or "Almouchiquoise", as in most sources, was so distinct from Souriquois (Mi'kmaq) and Etchemin (Maliseet) that Champlain's Native guide could only interpret some words and communication was strained. (55)

This difficulty in communication with the peoples of this region was experienced 80 years earlier by Explorer Verrazano who was exasperated by all attempts to

communicate with the native he encountered near the Kennebec River. (52) The distinct language of the Almouchiquoise would be a historical ethnographical mystery of the Gulf of Maine as some researchers claim that the Almouchiquoise were neither of the Algonquian or Iroquois languages or a least a third Algonquian dialect to the Souriquois (Mi'kmaq) and Etchemin (Maliseet). The mystery has endured as the peoples of the Gulf of Maine Coast suffered a great pandemic in 1617-1619 with a death rate of 90 to 100%. The struggling survivors of the Almouchiquoise and at least two other cultures were eventually absorbed into a collective Abenaki Culture. (55)

Champlain may not have actually witnessed the garden plots of the Almouchiquoise as these gardens would have been further inland and upriver where Champlain did not venture, and may have been told about the Almouchiquoise agricultural practices. (55)

Continuing south to Plymouth Harbour where the Pilgrims were still 15 years away from first landing there. Champlain encountered the Massachusetts Natives who also maintained garden plots and similar to Verrazano's experience in the "Land of Bad People" in 1524, Champlain found these peoples less agreeable than the Natives further northeast along the coast. Champlain found that the further they sailed south along the coast the "more numerous, unfriendly and thievish" were the peoples they encountered. When a shore party landed at "Nausett Harbour" for fresh water a skirmish broke out between the French sailors and Massachusetts or Armouchiquoise Natives over the ownership of a kettle. One Frenchman was killed and the ships guns were used to chase the Natives into the woods. (54)

The experience of the French with the tribes in the Gulf of Maine convinced them that Port Royal was the better place for a colony and discontinued further south exploration of coasts of what would later be known as the New England. The

French left the southwestern shores of the Gulf of Maine to the Natives and ultimately later to the English. The source author stated it best:
"*like so many minor events in history, the theft of a kettle was to have a great influence on the French-English configuration of North America*" (54)

People of the Gulf of Maine

The French assigned names to the different linguistic groups they encountered in North America and the names were not necessarily how the people referred to themselves. However, the French sometimes detailed encounters with the peoples of the region and offers a glimpse at the cultures of the people at the time of European contact. There are four groups distinguished by the early French with the Souriquois being one group who occupied the lands east of the St. John River including Nova Scotia, and Newfoundland and all the north coast from Cape Breton Island to the Gaspe'. The early English referred to these same peoples as Tarrentines and they would later be known as Micmac or Mi'kmaq. *(27)*

West of the Souriquois lands and between the St. John River and the Kennebec River were peoples the French referred to as the Etchemin. Later the Etchemin would be later known as Maliseet and included peoples between the Kennebec River and the Penobscot River. *(27)*

The Maliseet refer to themselves as "Woolastukwiuk" of the Woolastukw (people of the St. John River). The Maliseet reference is derived from a Mi'kmaq word for "he speaks badly" or version of which resulted in the differences in their languages. (60)

West of the Kennebec River and as far south were the Almouchiquois as the Souriquois referred to them, "Dog People" because the Almouchiquois and Souriquois had a history of war. *(10)* Unlike European warfare, warfare among

the different native peoples of Gulf of Maine watershed and the Maritime Peninsula at the time of European contact were usually single or series of skirmishes to avenge wrong doings and insults should the offences be real or perceived. *(27)*

The Almouchiquois peoples were distinct in language, clothing and dress from the peoples eastward. The Almouchiquois also practiced horticulture. It is also suggested by researchers that the "Dog People" reference may derive from the number of dogs the Almouchiquois possessed for keeping the wildlife out of their crop fields. (55) This group was somehow severely impacted by early European contact and through disease and warfare eventually faded from their lands and records. *(27)*

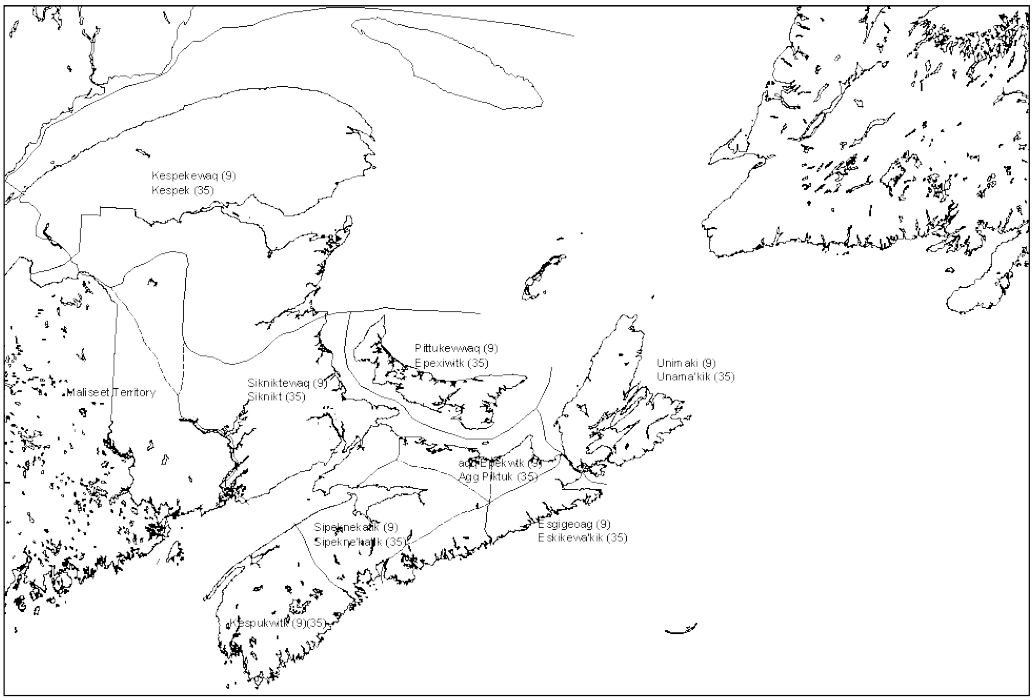
The Abenakis were the fourth Algonquin language group encountered by the early French and occupied an area centered inland on the Kennebec River. The Abenakis associated more with the French in Quebec and eventually the French referred to all the original four groups as Abenakis. The Abenakis also practiced horticulture. The English referred to the peoples west of Abenakis lands as Pennacooks but the French grouped these separate peoples with the Abenakis. According to the French, the next group of peoples located west of the Abenakis is the Sokokis of the Connecticut Valley. *(27)*

It is theorized by some sources that all the cultures and dialects of the coastal river drainages along the northeastern Coast of North America were of the Algonquian language origin with the exception of the Mohawk-Iroquois cultures found in the Pennsylvania, New York State and along the St. Lawrence River. These Mohawk-Iroquois language cultures cut off the Eastern Algonquian cultures from their Algonquian relatives to the west and north. (55)

Traditional Mi'kmaq Territory

Traditional Mi'kmaq territory is called *Mi'kma'ki* and covered an area that extended from the St. John River east to include Cape Breton Island, southern Newfoundland and from the Gaspe' Peninsula, south to the south shore of Nova Scotia.

Mainland peninsular Nova Scotia is named *Kmitkinag* by Mi'kmaq and Cape Breton Island is named *Unimaki*. *Mi'kma'ki* is further divided into seven political districts: *(12)*



Mi'kma'ki Political Districts Circa 1600 *(12)(13)(14)(15)*

District (Various Spellings)	***Geographic Territory***
Unimaki (12) (Unama'kik) (13)(14)(15)	Cape Breton Island Southern Newfoundland
Esgigeoag (12) (Eskikewa'kik) (13) (Eski'kewag) (14)	Canso-Sheet Harbour

Sipeknekatik (12) (Sipekne'katik) (13) (Sikepne'katik) (14)	Sheet Harbour-LaHave including Minas Basin and Cobequid Bay
Kespukwitk (12)(13)(14)	Southern Nova Scotia, LaHave-Middleton
Pittukewwaq (12) (Epexiwitk) (13) (Epekwitk) (14)	Prince Edward Island
aqq Epekwtk (12) (Agg Piktuk) (13) (Piktuk) (14)	Shediac to Canso Strait
Kespekewaq (12) (Kespek) (13) (Kespe'kewag) (14)	Chaleur Bay to Gaspe Peninsula
Sikniktewaq(12) (Siknikt) (13) (Sikniktewag) (14)	Chaleur Bay to Shediac

Three of these political districts are close proximity to each other and converge to share a portion of the Bay of Fundy and Minas Basin. *Pittukewwaq agg Epekwtk* (P.E.I and Northumberland Strait from Shediac to Canso Strait) territory is only the distance of the width of the Chignecto Isthmus to access the Bay of Fundy. *(12)* Other sources indicate different interpretation of the bounds of Pittukewwaq agg Epekwtk as being separate districts with Pittukewwaq being only PEI and agg Epekwtk being an area between approximately Merigomish Harbour and Canso Strait. *(13)(14)* The same sources interpret Esgigeoag district as extending from Canso through to St. Margarets Bay and Sipeknekatik as extending northwest through to the Northumberland Strait as shown on above Map. *(13)(14)*

The Study Area is within *Kespukwitk* Political District which includes all of Southern Nova Scotia from LaHave on the Atlantic Coast, through Middleton to the Bay of Fundy. *(12)(13)(14)* In Membertou's time this line may have been further north as Membertou had granted Champlain permission to mine for metals at New Minas. It is also possible he was acting as Grand Chief in Granting permissions in what is *Sipeknekatik (12) (Sipekne'katik) (13) (Sikepne'katik) (14)* Political District which includes New Minas.

Known Mi'kmaq Place Names (10)

Location:	Mi'kmaq Place Name:	Definition:

Yarmouth County:

Chegoggin	*Chegoggin*	"great encampment"
Pembroke Shore	*Kespoogwit*	"lands' end"
Overton	*Malegeak*	"fretful water"
Ohio	*Maligeak*	"Bent in all directions"
Hebron	*Malegeak*	"bent in different directions"
Milton	*Maligeak*	"crooked every which way"
Yarmouth	*Maligeak*	"crooked every which way"
Kelly Cove	*Utkubok*	"a spring of water"
Chebogue	*Utkubok*	"a spring of water"
Chebogue	*Che paug*	"great still river"
Melbourne	*Kespoospaak*	"where they catch beavers"
Pinkneys Point	*Ulsebookt*	"little harbour"
Comeau Hill	*Mkadom*	"haunt of the black-backed gull"
Little River Harbour	*Kespoospaak*	"where they catch beavers"
Wedgeport	*Chebec*	"the narrows"
Plymouth	*Neketaouksit*	"the great tidal river"
Tusket	*Neketaouksit*	"the great forked tidal river"
Pleasant Valley	*Welskoodaguk*	"picturesque valley"

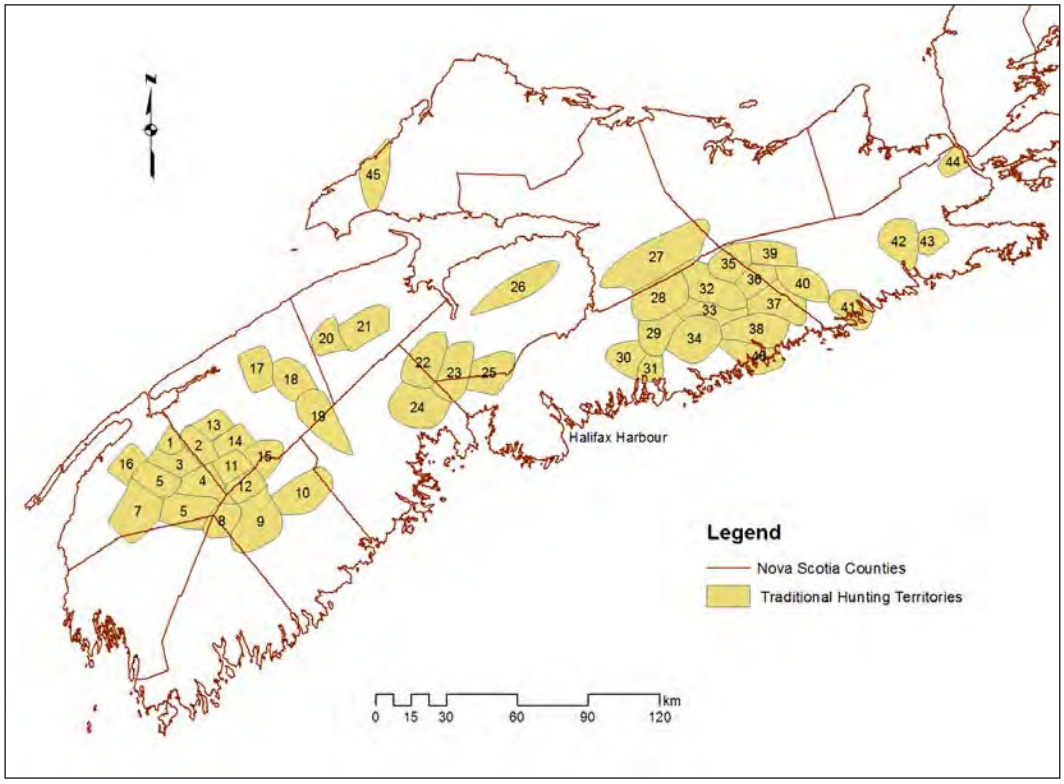
Quinan	*Nictahk*	“forks of a river”
Argyle	*Popkoktek*	“always running down”
Pubnico	*Pogomkook*	“land cleared of trees for cultivation”

Shelburne County:

Woods Harbour	*Cockeuquit or Cockawit*	“species of duck”
Forbes Point	*Cockerquit*	“passage name”
Shag Harbour	*Pipegueniche*	No Definition Given
Cape Sable Island	*Kespoogwitk*	“lands’ end”
Barrington	*Ministegek*	“he has gone for it”
Cape Negro	*Kespooguit*	“the end of land”

Mi’kmaq had an intimate knowledge of the ecology of their territory and fit their lives to seasonal cycles of the vegetation and animals and fish. Due to climate conditions, agriculture for food was a risk for Mi’kmaq. *(20)* Highly mobile Bands consisting of several related families would assemble at favorite camp sites. In the fall and winter the camps would disperse into small groups of 10-15 people for winter hunting. *(20)*

It was the duty and responsibility of the chief of each political district to assign the hunting territories to families and any changes were made in the presence of the Council of Elders which met in the spring and fall of every year. *(19)* Hunting districts of approximately 200-300 square miles were assigned to families. *(20)*



Mainland Nova Scotia Traditional Hunting Territories *(17)*

The districts were usually surrounded lakes and rivers and were passed on to sons unless there were no sons where the district was then assigned to another family. *(17)* The Mi'kmaq respected the boundaries of the assigned territories and only took from the land what they needed for the family to survive thereby preserving game and fish for the family's future survival. *(19)*

The hunting territories of the mainland Nova Scotia were numerous compact interior territories that encompassed the watersheds of interior lakes and rivers as Mi'kmaq did most their game hunting during colder months of the year when they moved inland from the summer coastal camps. *(17)(19)* Cape Breton Island Mi'kmaq hunting territories are larger and more regional encompassing shorelines and interior river systems indicating a more sparse population. *(17)*

Map Reference	Name of Family	Geographic Territory
1	Jim Meuse (sa'yem), "chief" of this band)	West Branch of Bear River to Lake Jolly
2	John Siah (Sa'ya)	Mulgrave Lake neighborhood (see fig. 3)
3	Ben Pictou	Around Sporting Lake, southwest of Bear River
4	Abram Labrador	Moosehead and Pine lakes
5	Joe Penhall	Pine Lake and Cofang Lake
6	John Barriyo	Long Tusket and Fourth lakes
7	Christopher Charles	Barriyo and Spruce lakes
8	John Louis	Shelburne lakes
9	Joe Maltai and father Old Joe Maltai	East side of Rossignol Lake West side of Rossignol Lake
10	Louis Luxey (La'ksi)	Ponhook Lake (divided among his sons).
11	Peter Glode	Fairy Lake and Edjemekudji Lake
12	Frank Charles (Tcayali'gil, "short squatty person)	South of Edjemekudji lake
13	Jack Glode (father of Peter Glode, No. 11)	Upper end of Liverpool lakes
14	Jim Glode (son of No.13)	Lower Liverpool lakes almost to Maitland
15	Stephen Bartlett (Wisa'u, "yellow")	Medway Lake and part of river
16	Jim Meuse (Joe Salome)	Fifth Lake and part of Weymouth River (White Sand Lake, but the location cannot be given)
17	Stephen Hood	Paradise lakes
18	Pictou	Dalhousie Lake and headwaters of Dalhousie river
19	Louis Labrador	Upper La Have River
20	Abe Hood	Mill Creek and Sand River
21	Ellick Morris	Gaspereau lakes
22	Frank Penhall	Lakes south of Windsor
23	Tom Phillips	Ponhook and caribou lakes
24	John Hammond	Lakes near Chester
25	Joe Brooks	Uniack lake below Mt. Uniack
26	John Ferris	Kennetcook River Valley
27	Frank Paul	Stewiacke River Valley
28	John Newell Cope	Musquodoboit River between Middle Musquodoboit and Musquodoboit
29	Andrew Francis	North of Ship Harbour Lake, Gould lake
30	Joe Cope	North of Jeddore
31	Young Joe Cope (son of No. 30)	Northeast of Jeddore
32	Andrew Paul	Grassy Lake north of Killag River

33	(Territory supposed to have belonged to Paul's)	
34	Sandy Cope	Tangier Lake and Scraggy Lakes
35	Frank Cope	Hunting Lake, Governor's Lake and Ten Mile Lake
36	Peter Joe Cope	Fifteen Mile Lake, Rocky Lake
37	Michael Tom (Toney)	Moser River
38	Young Peter Joe Cope	Large district north of Sheet Harbor
39	Mathew Salome	Big Liscomb Lake
40	Jim Paul	Hunting Lake and Liscomb River
41	Adam Paul (son of No.32)	Lake Mooin, Back of Liscomb
42	Newell Denis	Country Harbor, Isaacs Harbor, and North
43	Steve Malone	Loon Lake
44	Peter Anthony (half-breed)	Mill Village River, near Port Mulgrave
45	John Williams	Shulie Lake and river (Cumberland county)
46	Abram Gould	Neighborhood of Sheet Harbor. (He came originally from Cape Breton Island, where his family had territory, and received a tract from the Cope family in Nova Scotia)

Mainland Nova Scotia Traditional Hunting Territories Recorded Circa 1919 *(17)*

The warmer months were times of abundance with surrounding areas of coastal camps providing fish, shellfish, fowl and eggs. Offerings were made to spirits but the Mi'kmaq rarely stockpiled enough food for the entire winter. They brought with them from the coast smoked and sun-dried seafood, dried and powdered hard boiled eggs. Berries were boiled and formed into cakes were sun-dried. Grease and oils from boiled marrow and fat were stored and transported in animal bladders. Root vegetables such as *segubun* (wild potato) which was similar to today's sweet potatoes and wild nuts were also part of the winter food supply. *(19)*

Month	Seasonal Locations	Seasonal Groupings	Food Resource
Jan.	Sea Coast	Bands	Smelt, Tomcod, Seals & Walrus Beaver, Moose, Bear, Caribou
Feb. (Period of Winter Famine Begins)	Inland	Bands & Family Units	Smelt, Tomcod (ending) Seals & Walrus, Beaver, Moose, Bear, Caribou
Mar. (Period of Winter Famine)	Inland	Bands & Family Units	Smelt, Seals & Walrus (ending) Scallops, Crab, Urchins, Winter Flounder, Beaver, Moose, Bear, Caribou
April (Period of Winter Famine ends)	Sea Coast	Villages	Smelt, Winter Flounder, Scallops, Crab, Urchins, Sturgeon, Brook Trout, Alewife, Herring, Spring Bird Migrations, Beaver, Moose, Bear, Caribou
May	Sea Coast	Villages	Smelt, Scallops, Crab, Urchins, Sturgeon, Salmon, Brook Trout Alewife, Codfish, Capelin, Shad, Mackerel, Skates, Herring, Spring Bird Migrations, Beaver, Moose, Bear, Caribou
Jun.	Sea Coast	Villages	Scallops, Crab, Urchins, Sturgeon, Salmon, Brook Trout Alewife, Codfish, Capelin, Shad, Mackerel, Skates Lobsters, Spring Bird Migrations, Beaver, Moose, Bear, Caribou
Jul.	Sea Coast	Villages	Scallops, Crab, Urchins, Codfish, Capelin, Shad, Mackerel, Skates Lobsters, Spring Bird Migrations, Beaver, Moose, Bear, Caribou, Strawberries, Raspberries
Aug.	Sea Coast	Villages	Scallops, Crab, Urchins, Codfish, Skates Lobsters, Beaver, Moose, Bear, Caribou, Strawberries, Raspberries, Blueberries, Ground Nuts
Sept.	Sea Coast	Villages	Scallops, Crab, Urchins, Codfish, Skates, Salmon, Herring, Eels, Fall Bird Migrations, Beaver, Moose, Bear, Raspberries, Blueberries, Ground Nuts, Cranberries
Oct.	Small Rivers	Villages	Scallops, Crab, Urchins, Smelt Codfish, Skates, Salmon, Herring, Eels, Brook Trout, Fall Bird Migrations, Beaver, Moose, Bear, Blueberries, Ground Nuts, Cranberries
Nov.	Inland	Bands	Smelt, Tomcod, Turtles, Seals, Beaver, Moose, Bear, Ground Nuts, Cranberries

Dec.	Rivers	Bands	Smelt, Tomcod, Turtles, Seals, Beaver, Moose, Bear, Ground Nuts,

Mi'kmaq Annual Subsistence *(18)*

When fish, game and plants within the proximity of an encampment became scarce, the Mi'kmaq moved the encampment miles away to a new location with the women being responsible for breaking camp, transporting and setting up the next camp. *(16)(19)*

English Hostilities

The French did establish a small colony on Mount Desert Island some time prior to 1613 when it was attacked by Colonist from Jamestown Virginia led by Captain Samuel Argall. These were the first shots in a war between the France and England in North Eastern North America that would last for the next 150 years. Argall also attacked and destroyed the fortifications and remnants of St. Croix in that same year and proceeded to Port Royal to do the same where he burned and pulled down, burned and defaced fortifications, buildings, stores and Catholic symbols while the inhabitants were working too far away to prevent it. With Port Royal in ruins, most of the French colonists were forced to abandon Port Royal and return to France although it is not clear where the remaining colonists established themselves after leaving Port Royal. (54)

A trading post was established later by future Acadia Baron LaTour at the mouth of the Penobscot River prior to 1626 when he was force to leave for Acadia (Nova Scotia) by the new colonist at Plymouth. (54)

In1629 the English established a colony near the ruins of Port Royal and built Fort Charles and recruited Scots to man the new English colony within New Scotland. A year later La Tour managed to be appointed by English Royal decree, Baron of the lands from Yarmouth to LaHave. La Tour and his son established themselves near Cape Sable Island at Port La Tour in 1630. (54)

The Treaty of Susa in 1629 returned French lands taken by the English and the Scottish colony at the Annapolis Basin was taken possession by Isaac de Razilly in 1632 and sailed the Scottish colonist back to Scotland. It would be approximately 150 years before the Scottish returned to Acadia or New Scotland. (54)

Battling Barons

Isaac de Razilly was accompanied by his cousin Charles de Menou d'Aulnay, nephew Claude de Razilly and Nicholas Denys to establish his headquarters at LaHave in 1632. He was also accompanied by Recollet missionaries who were banished by the English. With the return of Acadia to the France, de Razilly's group of Frenchmen and their French investors began the first campaign to recruit a large number of French colonists to populate Acadia. (54)

The new arrangement de Razilly made as Acting Governor was to appoint d'Aulnay as his Lieutenant for the western portion of Acadia and Claude Le Tour's son Charles Le Tour as his Lieutenant for the Eastern portion. This arrangement was doomed from the start when de Razilly appointed d'Aulnay to take possession of the trading post that Claude le Tour was force to abandon in 1626. Le Tour was also determined to establish a fort at the mouth of the St. John River and ally with the powerful Natives there to discourage further English colonists interference. This arrangement gave him access to all the furs of the St. John River drainage and his considerable success made him a target for d'Aulnay. This rivalry saw both men become mortal enemies for the next 18 years with d'Aulnay as the aggressor and eventual victor in1645 with Le Tour's men being killed and his wife dying in d'Aulnay's captivity. d'Aulnay's success was short lived when he died 5 years later and ironically d'Aulnay's widow needed an experienced leader to maintain the d'Aulnay family operations and married Le Tour in 1653. The marriage seemed to work as they raised children and ran the operations at the fort at the mouth of the St. John River. (54)

Inter-Tribal Warfare

While the Barons of Acadia were battling for control of the fur trade the Native Peoples of the Gulf of Maine were also battling in inter-tribal warfare for control of the supply of furs. The Beaver Wars occurred in the region in between 1607and 1632 with one example being the Mi'kmaq invasion of the Penobscot summer territory of Mount Desert Island when the Mi'kmaq armed with French firearms established a stronghold on Mount Desert Island. (55)(58)

Inter-tribal warfare had occurred prior to Champlain's 1605 exploration of the shores of the Gulf of Maine as he was informed by others that the people who grew corn lived far inland and no longer kept coastal garden plots as they were constantly being raided by the Mi'kmaq. The Souriquois (Mi'kmaq) had invaded the Almouchiquoise- Massachusetts territory and raided the villages of the Saco River, Androscoggin and Kennebec River and had killed at least one "Bashebas" (Super Chief) and many "Sagamores" (Chiefs). (55)

Membertou himself led an attack against the native tribe of the Saco River (Almouchiquoise) in 1607. To avenge the death of Membertou's son in-law, Membertou began gathering his warriors from what must have been from all the Mi'kmaq territories as it took approximately a month to gather 400 Warriors. Membertou insisted on French assistance and acquired French muskets for possibly the first use of firearms in Northeastern North America by natives in inter-tribal warfare. Membertou left Port Royal with his warriors and returned several weeks later victorious. (56)

Membertou had accomplished what Donnaconna attempted with Cartier in 1535 in allying with the French to gain power and prestige among his people and the Mi'kmaq Nation and strike against his enemies.

Membertou had been a cruel warrior in his youth and accumulated many enemies in his lifetime and was content to live comfortably close to his French allies. Membertou's closeness to the French eventually cost him his life when he died of a European disease. (56)

The Mi'kmaq village at Port Royal was only Mi'kmaq village found in the sources reviewed that was surrounded by palisades as were all Native villages on the shores and inland villages of the Gulf of Maine. Palisades as defensive protection were necessary in a region with a long history of inter-tribal warfare over resources or vengeance.

The Maliseet village of "Meductic" on the Upper St John River was also a fortified village described by early explorers as a rectangular stockade of logs bound together by spruce root and supported by earth and stone. The stockade was completely surrounded on the outside by a trench. Inside the stockade was a longhouse for council meetings and keeping stores of supplies. The village was outside the stockade within a short distance. The site today is submerged by the Mactaquac Hydro Dam. (59)

Another native fortified site is located on the Nerepice River at Woodman's Point that was later built over by the French to construct Fort de Nerepice, also known as Fort Boisehe'bert. Today the site is a National Historic Site. (59)

French-English Hostilities

Returning to the English-French battles over territories and resources, the English were not finished with Acadia as an English campaign to remove Dutch Colonists from Manhattan Island was aborted due to a new peace between England and Holland. The campaign leader General Robert Sedgwick decided to use the resource gathered to take Pentagoet, Port Royal and LaHave in 1654. (54)

French Port Royal or Annapolis Royal as it was known to the English, was a constant irritant rather than a threat to the New England Colonies but became the focus of New England retaliations for French and Native Ally attacks on New England Colonists. Port Royal was also a haven for pirates that harassed New England shipping. The French-Native attacks on New England originated in Quebec and usually during winter when the smaller French-Native forces had the tactical advantage of rapid movement over a frozen landscape. However, the New England Colonists did not have the resources to lay siege on Quebec so they attacked Acadia and Port Royal which was within their reach geographically and militarily. (54)

The port within the Annapolis Basin, whether it was a French Port Royal or English Annapolis Royal, exchanged flags a number of times with the French flag being lowered for the final time in the fall of 1710. A large force of English regulars and New Englanders set sail from Boston and landed in the Annapolis Basin. The French and their Native Allies had brief skirmishes and exchanged sniper fire but the firing of the English siege cannons was not required because once they were in place the threat alone caused the French to negotiate a surrender. The French military honorably marched aboard English transports and were joined by their families to return to France. A total of 258 Frenchmen were transported out of the Annapolis Basin but French Acadian settlers remained to continue working the land and lend support to the ruined fort and the 450 English soldiers left there in 1710. (54)

In response to English and New England Colonist aggression, the Penobscot, Passamaquoddy, Maliseet and Mi'kmaq put aside inter-tribal warfare history and formed the Wabanaki Confederacy in 1701. The Confederacy member tribe could rely on each other to fight the outside enemies when their Symbol of the "wampum belt" was carried among the member tribes by envoys as a signal to gather for warfare. (58)

The Wabanaki Confederacy continued to harass English attempts to establish themselves in Acadia. A pattern of ambush, sniper fire and retreat by the Confederacy and particularly the Mi'kmaq severely hampered English activities outside the English fortifications. The Confederacy made more concerted harassing attacks on Annapolis Royal in 1711, 1724 and again in 1744 but the ambush tactics worked best for their limited and dwindling numbers. (54)(56) Although there were a number of peace treaties made between various Confederacy tribes and the English, this would be the pattern of harassment of the English throughout Acadia by the Mi'kmaq that would continue until the 1760's.

Captain John Doucett, who was the Lieutenant-Governor at Annapolis Royal from 1717 to 1726, realized that the Nova Scotia Indians would have to be won over and applied to the Lords of Trade for gifts to distribute to the natives. In 1722 Doucett gave a feast for the Native Chiefs at Canso and distributed the gifts and the Chiefs promised their friendship. However certain peace did not occur in New England until 1727 but peace with the Nova Scotia Chiefs was ratified at Annapolis Royal in 1726. (65)

In 1726 a large delegation of Natives gathered in Boston to negotiate a treaty with the English and after a month of negotiations an agreement was reached and was later ratified at Annapolis Royal by the St. John Indians (Maliseet) and Cape Sable Indians (Mi'kmaq) and later by an additional 26 Chiefs. (54)

Mi'kmaq and English Hostilities

The attitude towards the native populations was vastly different between the French and English. The French recognized the Natives as independent allies and not as subjects but as the sovereign owners of the land. However, the English had deeds based on their own interpretations of treaties that excluded and drove off the Native populations from their own traditional territories. *(33)*

To maintain the system of friendliness between the Native populations and the French, an annual giving of practical tools and goods to the Natives occurred during important gatherings or conferences. The English attempted a similar policy but English punishments for Native wrong doings were too harsh and humiliating for the Natives. Scalp bounties for Native men, women and children issued by the English colonies furthered reinforced Native and French friendly relations. *(33)*

In 1749, the Honorable Edward Cornwallis, Captain General, Governor-in-Chief, set out for Annapolis Royal ahead of the transports carrying the foreign Protestant settlers. He was then to proceed to Louisbourg with the transports to evacuate the English troops and transport them to Chebucto. *(34)* However, he was wind blown into Chebucto and decided to stay and begin the settlement of Halifax. Cornwallis found some French families on both sides of the harbour upon his arrival but no Mi'kmaq. After surveying the harbour he decided against the plan provided to him as Sandwich Point was too exposed to Southwest storms and settlement within Bedford Bay was too far inland for fishermen and was subject to siege by blockade of the Narrows. He decided to build the settlement on the side of a hill with a commanding view and with surrounding shores within cannon shot. *(35)*

On August 14, 1749 Chiefs were called to meet with the Governor and Council aboard the Beaufort to reaffirm the 1726 Treaty. Present were Chiefs and Deputies from Octpagh, Medochg, Passamaquady and Chinecto. After being asked if they have the authority to sign and agree with the treaty which they did. *(35)* Of the 13 Indians present, 3 were deputies from the St. John, 1 Chief of Chinecto and 9 others of various tribes but none appear to be of the Mi'kmaq of Shubenacadie whose territory Cornwallis has settled within. *(40)* The crucial tribes to Cornwallis and the Council were the St. John River tribes, crucial due to some members of Council having business interests in Maine and the New England area which was a war zone for the past 5 years as settlers encroached into

Indian lands. A treaty with the Cape Sable tribes would end hostilities at Annapolis Royal. There had been a Scalp Bounty placed on both these tribes the by the Governor of Massachusetts in 1744. Representatives of these tribes signed a treaty with Cornwallis on August 15, 1749. *(39)* Although Jean Baptist Cope would eventually sign and break a peace treaty with Cornwallis, Cornwallis never offered to negotiate with the Mi'kmaq the terms to which Halifax could be settled within Mi'kmaq territory. *(40)(37)*

The French Mission Sainte Ann was located deep within Mi'kmaq territory on the west bank of Shubenacadie River. It was here where Father Abbe' Jean-Louis LeLoutre provided spiritual services to the Mi'kmaq between 1738 and 1749 and where he incited the Mi'kmaq to fight the English and continued to use the mission as a staging area for Mi'kmaq attacks on Halifax. *(36)* A letter written by LeLoutre in July, 1749 stated that "we cannot do better than to incite the Indians to continue warring on the English". Not completely without a purpose of their own, the Mi'kmaq attacks that followed were a message to Cornwallis that they had the rights to their own territory as well as to hunt and fish freely within. *(37)*

In 1749, LeLoutre moved the Mission to the isthmus of Chignecto where he and French soldiers, officers and French settlers established a new settlement. His announcement divided the Shubenacadie Mi'kmaq as some wanted to be close to their religious services and some did not want to abandon their traditional territory. Jean Baptist Cope chose to stay at Shubenacadie and became the prominent elder and leader. *(38)*

Cornwallis was under the impression that the Mi'kmaq of the Shubenacadie Tribe were agreeable with the English presence due to the trade that was occurring with the Mi'kmaq until they suddenly disappeared from the settlement. The Mi'kmaq returned on September to begin a series of attacks on the settlement lasting 10 years beginning with an attack on an English party constructing a sawmill on the eastern side of the harbour. A letter from the Shubenacadie tribe was translated

and delivered to Cornwallis explaining their attachment to Kjipuktuk (Chebucto). However, Cornwallis extended the 1744 Massachusetts Scalp Bounty to include all Mi'kmaq. *(39)* After the attacks at Halifax and series of attacks at Canso and ships taken by Chignecto Mi'kmaq incited by LeLoutre and the French on Ilse Royal, the Scalp Bounty was a more appropriate response in Cornwallis' opinion as to declare war on the Mi'kmaq would give them a status of independent peoples rather than bandits, ruffians and rebels and were to be treated as such. On October 01, 1749, he gave orders to all his officers to annoy, distress, take and destroy all Mi'kmaq wherever found including those who assist them. He also offered 10 Guineas for every Mi'kmaq taken or scalp produced to commanding officers at Annapolis, Minas and Halifax. Cornwallis sent out troops to scour the woods around the new town in Halifax for Mi'kmaq and sent more troops to scour the province for Mi'kmaq. *(35)*

Since the founding of Halifax, the French have incited the Mi'kmaq to maintain a campaign of hostilities against the new English town and French could be seen with the Mi'kmaq scouting the town prior to Mi'kmaq attacks. The similar continuous attacks on the English network of Block Houses throughout the province confined the English to garrison towns and unable explore or clear land for settlements and cultivation. *(41)*

Mi'kmaq Survival

Prior to European contact, diseases among the native population were degenerative types of diseases that affected a small percentage of the native population. The European diseases were born from close animal contact and were epidemic diseases to which Europeans had developed partial immunities. The North American and South American native populations had no initial immunities to the diseases brought to them by early contact. *(27)*

Although the Mi'kmaq welcomed or at least tolerated Acadian settlement, they had regular contact with Acadians and Mi'kmaq paid a terrible price. Mi'kmaq had no immunity to European diseases such as smallpox and even common flues and colds devastated the Mi'kmaq population. Hardest hit by disease were Mi'kmaq populations were encampments nearest Acadian Habitations. *(12)* The Mi'kmaq of the Bay of Fundy and Eastern Atlantic Coast were most impacted by European disease. *(12)*

Between 1611 and 1760 there were several references to Mi'kmaq populations impacted by contagious disease but not all identify the disease nor the impact. The most notable references concern the Epidemic of 1616-1618 where a source states that Mi'kmaq population was reduced to approximately 2,000 from 15,000. *(20)* In 1746 a French expeditionary force landed at Chebucto (Halifax). Reports from Annapolis Royal indicate that at least 100 Mi'kmaq died in each village of "Chebenacadie", Unimaki and Abeqweit of disease attributed to the same French expeditionary force. *(12)*

Mi'kmaq mortality rates of up 66-75 percent were reported among the impacted Mi'kmaq villages. *(28)(20)* Upon realizing the dangers of contact with Europeans the relationship between Mi'kmaq and Acadians changed where Mi'kmaq limited their contact to as little that was necessary for trade. Fewer Mi'kmaq attended European gatherings and then quickly left after obligatory feasts and distribution of gifts from the King of France. *(12)*

It is difficult to determine what the Mi'kmaq population was prior to European contact. One source states that Mi'kmaq and European contact was gradual and the Mi'kmaq population was sufficient enough to quickly repopulate after epidemics. However, the 1746-48 Epidemic killed most of the Mi'kmaq repopulation gains and weakened the Mi'kmaq at the time of expansion of English settlers on Mi'kmaq territory. *(12)* In 150 years of European contact, it is estimated that 75 percent of the Mi'kmaq population was wiped out. *(26)*

Post Mi'kmaq and English Hostilities

News of the fall of Quebec on September 18, 1759 reached the town of Halifax. After 10 years of inciting the Mi'kmaq to hostilities against the English in the province, The French Priest LeLoutre was disowned by the Quebec Bishop and later captured by the English aboard a ship leaving for France. *(41)* Father Maillard, who had spent 25 years with the Mi'kmaq, convinced the Chiefs to go to Halifax and bury the hatchet with the English which finally allowed the English to leave their fortified towns and explore the rest of the province and bring more settlers into the province. *(41)*

There was still some residual apprehension on the English side as to if the Mi'kmaq would hold the peace. *(41)*

Although the Mi'kmaq were beginning to suffer as early as 1758 from years of warfare and diseases, the English remained fearful of the Mi'kmaq, particularly with growing tensions in the New England Colonies. Both the English and the Mi'kmaq were eager to negotiate a peace treaty and the Mi'kmaq were still able to negotiate from a position of strength. The treaties of 1760 did not resolve territorial limits but assured Mi'kmaq access to the natural resources the land had always provided them. *(38)* However, the land provided less over time as they were displaced from traditional territories and the amount of game available declined. *(38)*

With the 1760 series of treaty signings with various chiefs of the Mi'kmaq who had gathered on the coast for the purpose of negotiating peace and trade. The English decided to build Truck Houses at each of the existing forts for the exclusive trade with the Mi'kmaq and the first Truck house was built at Fort Clearance in Dartmouth. The Shubenacadie Lakes and River System were opened up as a transportation route from Halifax to the Bay of Fundy. *(41)*

There were an estimated total 1500 Mi'kmaq men, women and children within mainland Nova Scotia and Cape Breton Island in 1762. *(41)* With an increase in tensions in Boston and the Mi'kmaq threat of hostilities diminishing within the province, a decision was made to recall the troops from Fort Cumberland, Annapolis Royal, Fort Frederick, Fort Amherst, St. John and Louisbourg to concentrate them in Halifax. *(41)*

As settlers encroached on Mi'kmaq traditional lands, Nova Scotia treaties had guaranteed Mi'kmaq access to the province's natural resources and in 1762 issued a proclamation that there was to be no trespassing on lands claimed by the Indians until the Crown made a decision on the claims. The proclamation was more of a formality with little enforcement. The government did begin to issue licenses to the Mi'kmaq in 1783 for lands they promised to settle. *(42)*

In the late 1700's the system of Truck Houses went through a series of revisions in financial structure and there were closures as trade with the Mi'kmaq had declined due to mild winters that disrupted traditional hunting and trapping as well as quality of furs. The Mi'kmaq were encouraged to diversify by manufacturing baskets and tool handles but this was not enough to prevent Mi'kmaq petitioning for relief supplies. *(42)*

The Office of Superintendent of Indian Affairs was established to manage the peace with the Mi'kmaq and later became a conduit of provisions. As the Mi'kmaq suffered hardships from European diseases and depletion of fur and food stocks, the British treaty obligations of providing provisions was later considered charity from the Government's perspective. As the Mi'kmaq threat diminished over time so did the British commitment to treaty obligations as provisions were sporadic or had to be petitioned for by the Mi'kmaq. *(43)*

The Mi'kmaq traditional territories were granted away to these successive waves of emigrants. During these times of emigrant settlers, Mi'kmaq were not granted

title to land but rather were granted “Licenses of occupation during pleasure”. The land was owned by the Crown and reserved for particular Mi’kmaq Bands. The first of these licenses in Nova Scotia was granted in the 1780’s and locations were typically coastal and ravine sites long frequented by Mi’kmaq.

In 1817, the Government began settling numerous Mi’kmaq families in locations such as Shubenacadie, Gold River and Bear River. In 1820 the reserve system was started and each county was instructed to set aside lands near sites frequented by Mi’kmaq. Indian lands not exceeding 1000 acres were being set aside in each county of Nova Scotia totaling 22,050 acres for exclusive use by the Mi’kmaq. The Lands were not always of good quality and not necessarily traditional Mi’kmaq hunting and fishing territories. The Mi’kmaq continued to occupy, hunt and fish lands outside these new reserves. *(43)* If a reserve parcel was good quality land, it was subject to encroachment by settlers. *(20)*

Local History

On the bank of the Chebogue River at what was known as Indian Point, point Crocker or Crocker Hill, stood a stone cairn that was thought to be a monument or burial of a great chief. It has since been destroyed when the site was used as a firing range during World War II. It is also thought that it is not a burial because Mi’kmaq Burials in Southwest Nova Scotia were usually on the secluded Islands towards the Cape Sable area where the locations were kept secret. (61)

The same location is also thought to be the site of Fort Lomeron that was erected by David Lomeron who came to Acadia every season between 1614 and 1623 for the fur trade. The trading post had some sort of fortifications and was taken by the English Kirk Brothers in 1628 but returned to the French under treaty. (61)

One source places Fort Lomeron as a trading post at McGray's Cove on Cape Sable Island and built by Charles La Tour. The settlement on Cape Sable was attacked and destroyed by the British in 1630. (64)

Membertou's oldest son Louis is placed at "Cape Forchu" in 1613 when he greeted father Masse as chief after his father Membertou died. (61)

A Roman Catholic chapel was built on a hill near the Abupic River some time in the mid 1600's. Visiting missionary priests would provide the religious requirements to the scattered Acadians as well as the Natives who inhabited the surrounding woods and were welcomed by the Acadians. (67)

In 1715, 27 New England fishing vessels were seized by the Cape Sable Indians and a commission was formed to negotiate the return of the vessels. (72)

At Some time between 1744 and 1745 several armed vessels from New England arrived at Annapolis Royal and attempted to press the local inhabitants by violence to act as pilots to attack and scalp the Indians and any inhabitants that had any Indian blood in them. Not only were a large number of the inhabitants of mixed race they did not dare go against the Indians for fear of certain vengeance the Indians would inflict on them after these new Englanders left. (62)

In 1759 Mariner and Officer Silvanus Cobb reported to Governor Lawrence that while transporting New England settlers to Nova Scotia they were fired upon by the Cape Sable Indians along with some Acadians. The plans to settle New Englanders to Nova Scotia was postponed until the following year when Cobb landed settlers at Liverpool. (66)

It was the opinion of the English and new Englanders that the St. Francois Indians north along the border of Canada, the St. John Indians of the St. John River and the Cape Sable Indians thought that their remoteness protected their own villages

from destruction by the English. The Nova Scotia Indians were the most cruel and savage of the other Tribes (63)

The Cape Sable Indians (Mi'kmaq) were estimated to be 600 warriors but this number may have included warriors from village along the entire coast from Annapolis Royal to LaHeve and possibly as far north as Canso. It is known that the number does not include Mi'kmaq living in mission communities. The mission at Shubenacadie had 200 warriors, 80 warriors at Maillard's mission on Isle Royal and another 250 warriors from the Miramichi and Restigouche. (68)

It is estimated that two thirds of the Cape Sable Mi'kmaq warriors and half the Mi'kmaq warriors of the villages of northern portion of the Mainland Nova Scotia, died in 1746 as a result of participating in the failed d'Enville Expedition of the same year. The diseases carried by the warriors to their villages would cause deaths among the women, children and the elderly which cannot be counted. The contagious diseases accompanying the 1746 French Expedition at Chebucto (Halifax) may be responsible for the deaths of one third to one half the entire Mi'kmaq population of Peninsular Nova Scotia in 1746-1747. (68)

The Native Chiefs of the tribes east of the Penobscot River were bound by an earlier treaty to remain neutral during war but came to the aid of the St. John Indians (Maliseet) and the Cape Sable Indians (Mi'kmaq) during English attempt to subdue these Tribes. In 1745, New England declared war on all these peoples and offered a bounty of $150 for the scalps of these Natives and called for the formation of Volunteer Companies to search out the Natives. (69)

Some of those New Englanders who participated in these Volunteer Companies were later sought out by the Natives and were cut down working in their fields in some cases in ambushes. (69)

Upon review of the 1871 A. F. Church Map, the community on the "Lake Road" to Great Pubnico Lake does not appear on the detailed map.

There is a location just east of Hebron, along the road between Brooklyn and the Chebogue Meadows Provincial Park that is marked "Indians". (81)

Cape Sable Mi'kmaq Vengeance

In 1676, during King Phillips War, a Major Richard Waldron of Dover, New Hampshire gave the mandate to a Maine merchant to seize "all Indians East". The vessel "Endeavor" sailed to Cape Sable Island and met with the Chief, his wife and two other and entertained them all day on board the "Endeavor" followed by a short sail before returning the guests to their village. The following day the Chief and his wife returned with more from his village for another day of the same. However, they were kidnapped by the crew as was the plan and placed in the hold with nine other kidnapped Natives of Machias, Maine. A total of 17 natives were kidnapped and sold as slaves in the Azores. (70)

The kidnapping of the Maine and Cape Sable Natives so offended the Natives of Maine and Cape Sable that they took revenge on New England fishermen. In 1677, 70-80 Mi'kmaq boarded a vessel from Boston at anchor in Port La Tour and killed the Captain by holding him down on the deck and stuffing his hat in his mouth until he died. (71)

The Cape Sable Indians (Mi'kmaq) did not forget Major Richard Waldron who kidnapped their Chief and some of their people but Waldron was always just beyond their reach. Waldron was also a merchant who traded with natives but was despised by them because of his dishonesty. He is credited with the capture of 400 Natives at Dover, New Hampshire through a false invitation. The native prisoners were either executed or sold into slavery. Waldron also cheated the natives in

trade by tipping the scales with his finger and did not cross out their accounts when they were paid. (71)

It took the Cape Sable Mi'kmaq 14 years to catch up to Waldron when earlier in the day they placed two Native women within the Garrison where the eighty year old Waldron was holding out. The women open the gates later that night and Waldron's quarters were full of Mi'kmaq out for revenge. Tied to a chair, Waldron was methodically tortured through the night and the Mi'kmaq cut each of his of his fingers while proclaiming that "this finger will not tip the scale anymore". They also caved crosses in his chest proclaiming "here I cross out my account" This was how the Cape Sable Natives exercised their "vindictive justice" for what had happen to their people. (71)

Mi'kmaq once lived on Lake Road which branches off Highway 103 at Pubnico Head and reaches Great Pubnico Lake. Local history claims that the Mi'kmaq always lived in this area long before Pubnico's founding in 1653. (73)

During the 19th century, the predominant Mi'kmaq family on the Lake Road at that time was the "Gloade" or "Glode" family. Church records spell the name "Glaude" on occasion but the records have Gloade family members dating back to 1829 to 1930. Other Mi'kmaq names found in the area throughout local history include: Newell, Pictou, Francis and Bartlett. The Mi'kmaq village on the Lake road is no longer there. (73)

Southwestern Nova Scotia Mi'kmaq Today

Today the Mi'kmaq of Southern Nova Scotia are comprised of four bands with the Acadia Band having five Reserve Parcels distributed between Yarmouth and Luneburg Counties and the Bear River First Nation Band having three Reserve Parcels distributed within Digby and Annapolis Counties. Further north on the Cornwallis River in Kings County is the Annapolis Valley Band located with

Reserve Parcels located within Kings and Hants Counties. The Glooscap Band has a Reserve Parcel located within Kings County. (75)(76)(77)(78)

The Acadia Band received two Reserve Parcels in 1820 with Gold River, Luneburg County being one and Wildcat being the other on the Medway River, Queens County and is an original Mi'kmaq settlement. The Acadia Band received the Ponhook Reserve Parcel on the Mersey River, Queens County in 1843 and the Medway Reserve Parcel on the Medway River at Greenfield in 1865. The fifth parcel received by the Acadia Band is the Yarmouth Reserve, Yarmouth County in 1887. (74) The Acadia Band's total registered population is just under 1300 Band Members. (75)

The Bear River First Nation received the Bear River Parcel, IR6, in 1820. The Parcel straddles Digby and Annapolis Counties and is located on the Bear River. The other two Bear River Reserve parcels are located on and adjacent the Grand lake Flowage, just south of Annapolis Royal. (79) The total registered population is approximately 300 Band Members. (76)

The Annapolis Valley Band has a registered population of approximately 260 Band Members. (77) The Horton Reserve Parcel, IR35 is adjacent the Hants-Lings County line and just southwest of Hantsport. There were no population figures available for the Glooscap First Nation.

Land Claims

A review of the Status of Specific Claims indicates that all Acadia Band Specific Claims have either been concluded or settled. The Annapolis Valley Band has one active Specific Claim concerning the St. Croix Reserve IR 34 located in Hants County. Bear River First Nation's Specific Claims have since been concluded. (80)

Historical Review Summary

Due to the rock types found in the bedrock formations underlying and surrounding the Project Site there may be potential for rock collecting for purposes of both utility and decoration. (2)

Southwestern Nova Scotia History has a rich Mi'kmaq history from the Inter-Tribal warfare, hosting the early French arrivals and numerous clashes with the English and New England Colonists. Being located on the Gulf of Maine it was difficult to avoid the conflicts and violent history that plagued the Region. The Cape Sable Indians (Mi'kmaq) may have been hardened out of necessity and gained a reputation as a formidable enemy along with their Maliseet allies the St. John Indians.

The surviving known Mi'kmaq Place Names between Yarmouth and Cape Sable indicate a strong Mi'kmaq presence in the vicinity of the Project Area. Archaeology also indicates a presence that predates European contact by at least 2500 year before present and possibly as early as 4000 years before present.

There are no recorded traditional hunting territories from the 1922 survey within the study area. (17)

There are no Active land claims within the study area filed at this time.

4.4 Mi'kmaq Traditional Use Findings

The traditional use data gathered for this MEKS was drawn from one primary source: the Mi'kmaq individuals who reside in the surrounding Mi'kmaq communities and those who are familiar with or undertake these types of activities. This data was acquired through interviews with informants that allowed the study team to identify the various traditional use activities, resources and areas that are currently or have been used by the Mi'kmaq. Interviewees were asked to identify areas within the Study Area, and Project Site, where they knew of traditional and current use that has/had taken place. These interviews took place in December, 2011.

To easily identify the traditional use data findings of this study, the analysis has been categorized into two (2) geographic areas. The first is the Project Site – the areas where the proposed turbines, roads, and transmission lines are planned to be built. The second is the Study Area, located within a 10 kilometer diameter of the Project Site, encompassing the areas of Wedgeport, Comeaus Hill, Central Chebogue, Arcadia, Yarmouth Reserve, Summerville, Raynardton, Tusket, Tusket Falls, and Bellville.

Based on the data that was gathered by the study team, it appears there is Mi'kmaq traditional use activities occurring, or have occurred, in the various land and water areas throughout the Study Area, and within the Project Site.

Project Site

The Project Site, as well as locations in the *immediate* vicinity (>50 metres) of the Project Site, will be considered when analyzing traditional use activities.

Fishing

Gaspereau was identified by informants to be fished in three (3) areas that intersect that Project Site. These areas occur in the Tusket River near Tusket Falls, and around Pleasant Lake.

Bass and trout were also reported to be fished by informants. The two (2) bass areas occur in the Tusket River, with one area specifically identified in the Tusket Falls area. Trout fishing was described in two areas near Tusket Falls.

Other species of fish identified during the interview process were herring, lobster, pickerel, and salmon.

In terms of the timelines reported for these fishing activities, a slight majority of the data was classified as recent past activities by the informants with forty-eight percent (48%) of the areas labeled as such. Current use activities were analyzed with forty-three percent (43%) of the data classified as taken place within the last ten years. Almost all of the areas represented as recent use were also classified as current use, suggesting concurrent use in the area by the Mi'kmaq since at least the 1950's.

At least one third of the fishing activities were for commercial purposes.

Hunting

With respect to the Project Area, only two hunting areas were identified by the informants. One (1) rabbit hunting area was noted to be in the area of Tusket Falls and Summerville, and one (1) deer hunting area was found to be between Little Plymouth Lake and Churchills Mill Lake.

Gathering

Three gathering areas were found to be occurring on or near the Project Site. These include one (1) maple tree harvesting area near Pleasant Lake, one (1) blueberry area surrounding Tusket Falls, and one (1) sweetgrass gathering area, also, surrounding Tusket Falls.

Study Area – Wedgeport, Comeaus Hill, Central Chebogue, Arcadia, Yarmouth Reserve, Summerville, Raynardton, Tusket, Tusket Falls, and Bellville

As mentioned previously, the MEKS data is also drawn from the Study Area which encompasses anything within five (5) kilometers of the Project Site. The purpose of this portion of the study is *to portray other land use activities that may have been missed in the Project Site data analysis*.

Fishing

From the data gathered, the study found that lobster is the most fished species throughout the Study Area. Twenty seven (27) lobster fishing areas were recorded in the Tusket River from Raynardton to Tusket Falls, from Tusket out to the Atlantic Ocean by Wedge Point; waters by Little River Harbour, and surrounding Big Cook Island; waters surrounding Turnip Island, Inner Spectacle Island, and Ram Island; off shore from Pinkneys Point, up the Chebogue River to Arcadia; and around the Yarmouth Reserve. A slight majority of data collected lobster fishing (53%) was analyzed to be for harvest, or food, fishery, and the remaining as commercial fishing.

Trout fishing was found to be occurring in eighteen (18) areas from Flick Island, in the Tusket River, to near Wedgeport and Mikes Island; also in the Tusket River from Cornelius Island to Lake Vaughan near Tusket Falls; in the Annis River near Summerville; in brooks and streams near Greenville; in Porcupine Lake;

surrounding Trefry Lake; in the Chebogue River from Arcadia through Central Chebogue, to Clements Island; and in and around Melbourne Lake.

Other species mentioned by informants, but to a relatively lesser degree than those mentioned above are bass, gaspereau, pickerel, clam, eel, perch, scallop, blue fish, catfish, herring, mackerel, oyster, salmon, and smelt.

With regards to the timeline categories for fishing activities in the Study Area, the majority of fishing data collected was classified as current use with forty eight percent (48%) of activities falling in this category. Recent past use represented thirty nine percent (39%) of the fishing data, and historic use represented twelve percent (12%). Continued use of these areas for fishing can be suggested based on much of the data labeled "recent past" use were also found in the current use analysis.

Hunting

Rabbit hunting was the activity identified as the most occurring in the study area, with eleven (11) areas recorded. These areas were primarily focused in the areas surrounding the Yarmouth Reserve and Arcadia. Other areas include surrounding Trefry Lake; Porcupine Lake; between Brooklyn and Churchills Mill Lake; near Greenville, and an area near the Annis River, Summerville, and Tusket Falls.

Nine (9) deer hunting areas were described by informants primarily in areas surrounding Yarmouth Reserve, Arcadia, and Trefry Lake, but also in the outskirts of Yarmouth; from Rockville through Central Chebogue, to near Sand Beach; and from Hibbards Lake to Summerville to Greenville to Churchills Mill Lake.

Other species identified, but occurring in relatively smaller numbers are partridge, pheasant, and porcupine.

In general, a little over eighty five percent (85%) of the information gathered indicated hunting activities in the Study Area have been on going in the recent past up to current use. Approximately fifteen percent (15%) of the hunting data was classified as historic use.

Gathering

There were fifteen (15) blueberry gathering areas noted in the interview process in the study area. A large portion of this data is located in the surrounding areas of the Yarmouth Reserve and Arcadia, including Sand Beach, Trefry Lake, and south of Brooklyn. Other blueberry gathering areas are along and near the Chebogue River near Rockville and Central Chebogue; south of Melbourne; Greenville; surrounding Tusket Falls; and an area around Cloverhill Brook, Hibbards Lake, and the Annis River.

Nine (9) raspberry gathering areas were identified by informants in the areas surrounding the Yarmouth Reserve and Arcadia, including Sand Beach, Trefry Lake, Porcupine Lake, Churchills Mill Lake, and south of Brooklyn. One other area was in the Cloverhill Brook, Hibbards Lake, and the Annis River area.

Blackberry was recorded in the interviews in eight (8) areas such as in the surrounding areas of the Yarmouth Reserve and Arcadia, including Sand Beach, Trefry Lake, and south of Brooklyn; and in the area of Cloverhill Brook, Hibbards Lake, and the Annis River.

Eight (8) sweetgrass were noted in the Yarmouth Reserve and Arcadia area, as well as areas surrounding Tusket, and areas surrounding Tusket Falls.

Other gathering activities and species mentioned by informants, but to a relatively lesser degree are apples, strawberries, maple trees, mayflowers, and boughs.

In terms of the timeline categories forty one percent (41%) of the gathering information were reported as current use, and thirty seven percent (37%) were categorized as recent past use. The remaining twenty two percent of data was historic use information.

Cultural

There were no cultural related information given by the informants for this study.

4.5 Mi'kmaq Significant Species Process

In order to identify possible project activities which may be of significance to the Mi'kmaq with regards to traditional use of the Study Area, the project team undertakes a number of steps in order to properly consider the MEK data. This involves three main components: Type of Use, Availability, and Importance.

Type of Use

The first component of analysis is the "Type of Use" of the resource which involves the categorization of the resource. All resources are placed into various general categories regarding the Type of Use**.** The category headings are Medicinal/Ceremonial, Food/Sustenance, and Tool/Art. These general headings are used so as to ensure further confidentiality with respect to the resources and the area where they are harvested. As well, the total number of instances where a resource harvest has been documented by the study is quantified here as well.

Availability

After the data is considered by the Type of Use it is then considered in accordance with its' availability: This involves considering whether the resource is abundant in the Study Area or whether it is rare or scarce. Based on the information that is provided to the team from the ecological knowledge holders and/or written literature sources, the availability of the resource is then measured in regards to

other water or land areas that are outside of the Study Area. This measuring is primarily done in the context of the areas adjacent to the Study Area, and if required, other areas throughout the province. By proceeding in this manner, the study can provide an opinion on whether that resource may be **rare, scarce** or **abundant**.

The data is classified in accordance with following:

Rare – only known to be found in a minimum of areas, may also be on the species at risk or endangered plants list
Common – known to be available in a number of areas
Abundant – easily found throughout the Study Area or in other areas in the vicinity.

This allows the study team to identify the potential impact of a resource being destroyed, by the proposed project activities, will affect the traditional use activity being undertaken.

Importance

The final factor the MEKS team considers when attempting to identify the significance of a resource to Mi'kmaq use is whether the resource is of major importance to Mi'kmaq traditional use activities. This can be a somewhat subjective process, as any traditional resource use will be of importance to the individual who is acquiring it, regardless if its' use is for food or art or regardless if the resource is scarce or abundant. However, to further identify the importance; the MEKS team also considers the frequency of the use by the Mi'kmaq; whether the resource is commonly used by more than one individual, and finally the actual use itself. These factors support the broad analysis of many issues in formulating an opinion on significance and supports identifying whether the loss of a resource will be a significant issue to future Mi'kmaq traditional use, if it is destroyed by the project activities.

4.6 Mi'kmaq Significance Species Findings

This MEKS identified resource and land/water use areas within the Project Site and Study Area that continues to be utilized by the Mi'kmaq people, to varying degrees.

Type of Use

The study identified the following:

TYPE OF USE	NUMBER OF AREAS	NUMBER OF SPECIES
Food/Sustenance	162	31
Medicinal/Ceremonial	44	6
Tools/Art	15	5

Availability

During the information gathering for both Study Area options, there were no rare species of plants or animals identified by the informants. However, informants did mention one species that are under special concern: the American Eel. (82)

Importance

While stated above, it is worth noting again that assigning an importance designation for any activity done by Mi'kmaq can be a subjective process, and that all activities are considered ways of preserving the Mi'kmaq way of life, in some shape or form.

During the analysis of the Study Area data, two themes of importance became known. The first is the amount of berry picking being done in the area. While the concentration of this activity centered in areas around the Yarmouth Reserve and Arcadia areas, it is worth noting this simply due to the number to data points collected.

The second is fishing in the Tusket River, specifically in the Tusket Falls area where the transmission line crosses. There is reportedly some fishing going on in this specific area, some which are used for commercial purposes. Care should be exercised when working in the area.

As noted previously, eels are considered a species under special concern in Nova Scotia. The Mi'kmaq could still rely on this species for sustenance and cultural ceremonies and disturbances to their habitats could have an impact on Mi'kmaq use. However, the relatively small number of areas reported by informants could minimize this impact.

All other species mentioned throughout the study can be considered common and abundant throughout Nova Scotia

5.0 CONCLUSIONS AND RECOMMENDATIONS

This Mi'kmaq Ecological Knowledge Study has gathered, documented and analyzed the traditional use activities that have been occurring in the Project Site and Study Area by undertaking interviews with individuals who practice traditional use, or know of traditional use activities within these areas and reside in the nearby Mi'kmaq communities.

The information gathered was then considered in regards to species, location, use, availability and frequency of use to further understand the traditional use relationship that the Mi'kmaq maintain within the Project Site and Study Area.

Project Site

Based on the data documentation and analysis, it was found that the Mi'kmaq have historically undertaken some traditional use activities in the Project Site (or adjacent to), and that this practice continues to occur today.

Study Area

Based on the data documentation and analysis, it was concluded that the Mi'kmaq have historically undertaken traditional use activities in the Study Area, and these practices continues to occur today. These activities primarily involve the harvesting of fish species, but also include plants and animals; all of which occurs in varying locations throughout the Study Area and at varying times of the year.

Lobster was found to be the most fished species in the Study Area. This fishery was found to be occurring into the Atlantic Ocean, but also in coastal areas, and the major rivers, such as the Tusket River, and Chebogue River. Another species of fish noted by multiple informants is **trout**.

Rabbits were found to the most hunted species, with **deer**, **partridge**, and **pheasant** being mentioned multiple times, as well.

For gathering activities, berry picking was mentioned by informants many times as occurring primarily in the areas surrounding Yarmouth Reserve and Arcadia. Specifically, **blueberries** were brought up the most, followed by **raspberries**, and **blackberries**.

RECOMMENDATION

The Wedgeport Wind Farm MEKS has identified Mi'kmaq Traditional Use Activities occurring in the Project Site as well in various locations throughout the Study Area. Based on the information gathered and presented in this report, there is a potential this project could affect Mi'kmaq traditional use in the area, especially with regards to commercial fishing in the Tusket Falls area. It is recommended that the traditional use activities of the Mi'kmaq be reflected upon in the overall environmental presentation and any remediation or project work consider the interest the Mi'kmaq have in the area.

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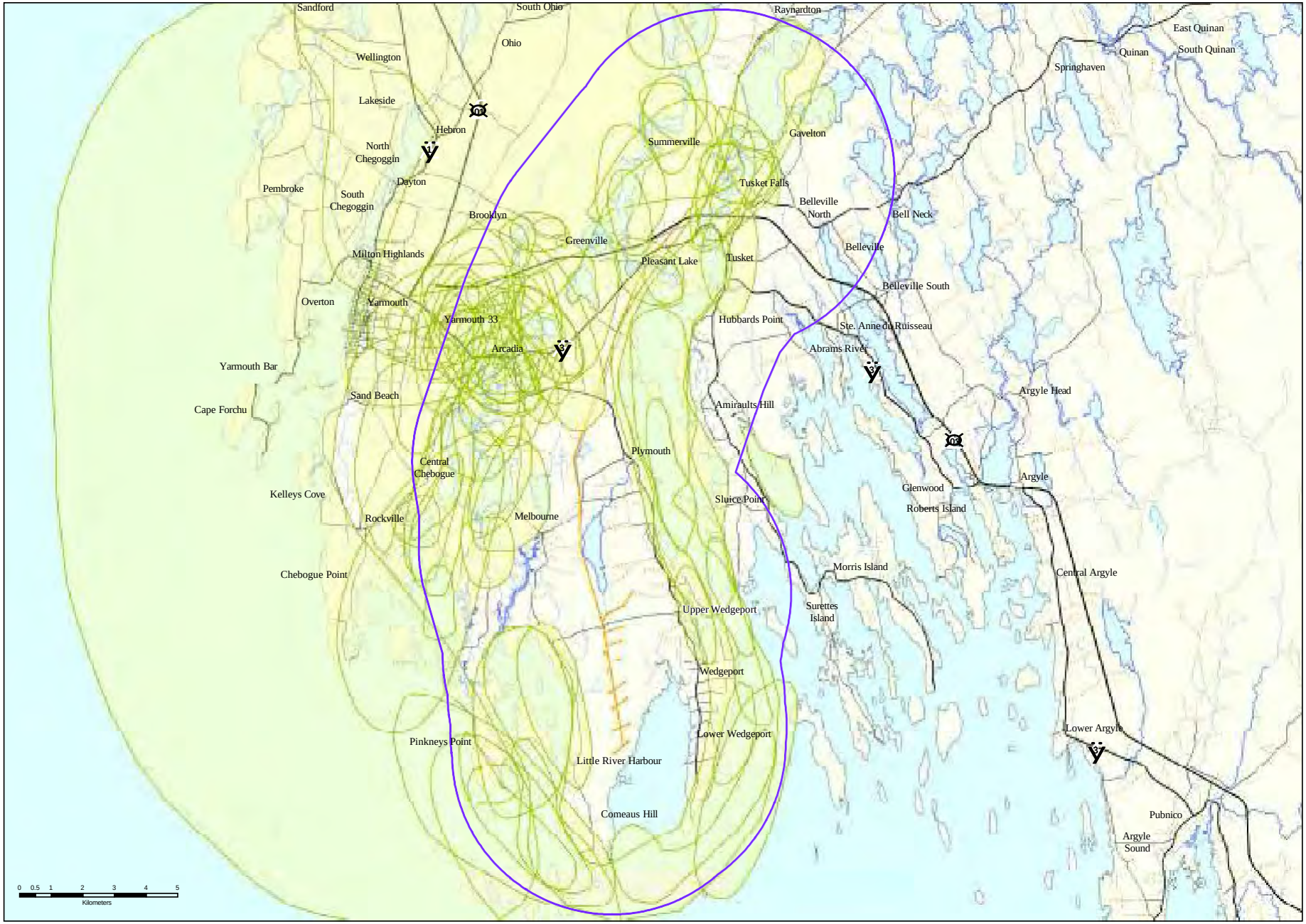
APPENDIXES

Map A

Mi’kmaq Traditional and Current Use Areas



Wedgeport Wind Farm MEKS

Mi'kmaq Traditional and Current Use

Legend

- Study Area
- Traditional Use Data
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Project Site
- Reserve Land

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

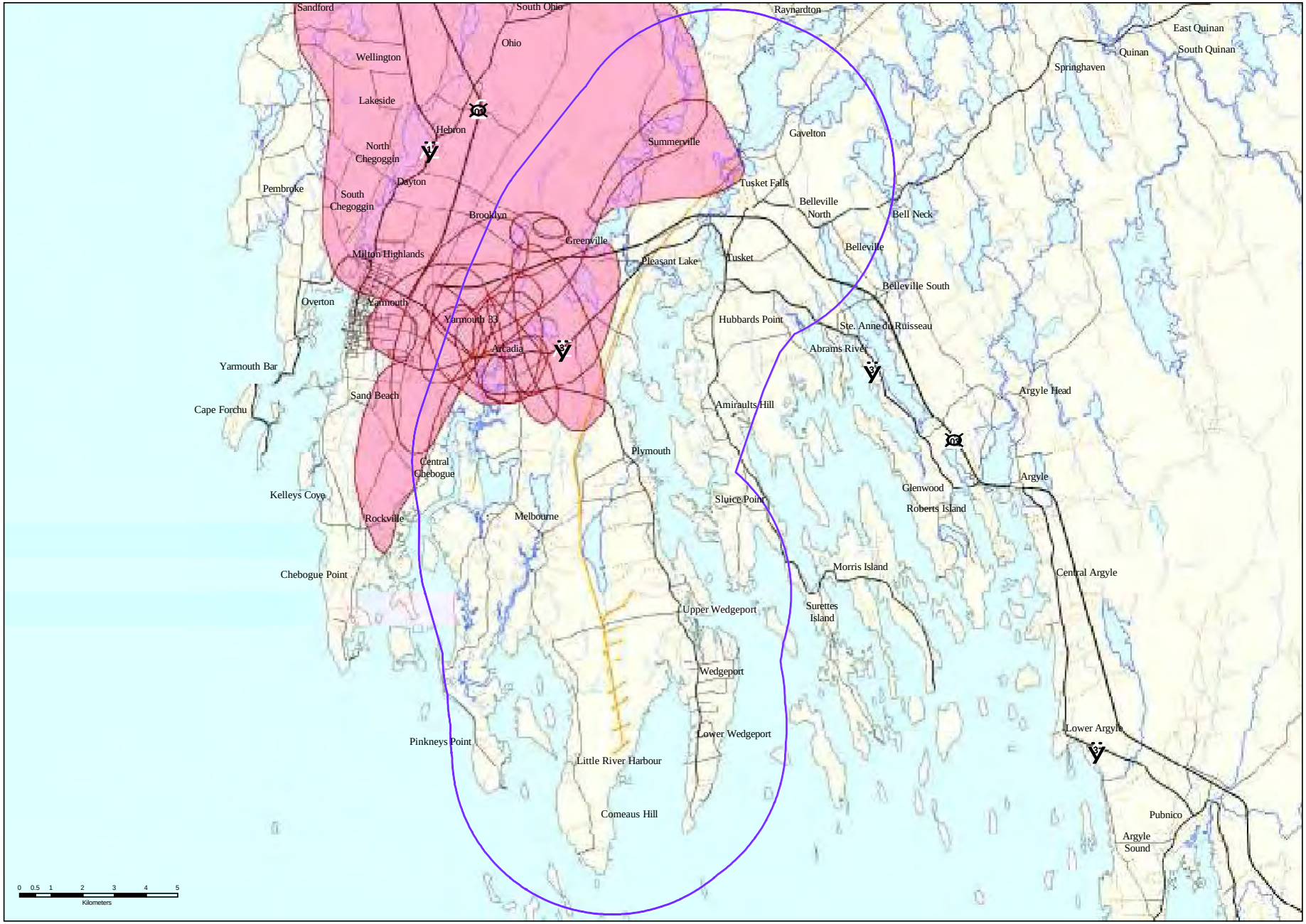
Datum: UTM NAD83 Zone 20
Scale: 1:110,000

Version: 1
20 Mar 2012

Membertou
GEOMATICS SOLUTIONS

Map B

Mi’kmaq Traditional and Current Hunting Areas



Wedgeport Wind Farm MEKS

Mi'kmaq Traditional and Current Hunting Areas

Legend

- Study Area
- Hunting Areas
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Project Site
- Reserve Land

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

Datum: UTM NAD83
Zone 20
Scale: 1:110,000

Version: 1
20 Mar 2012

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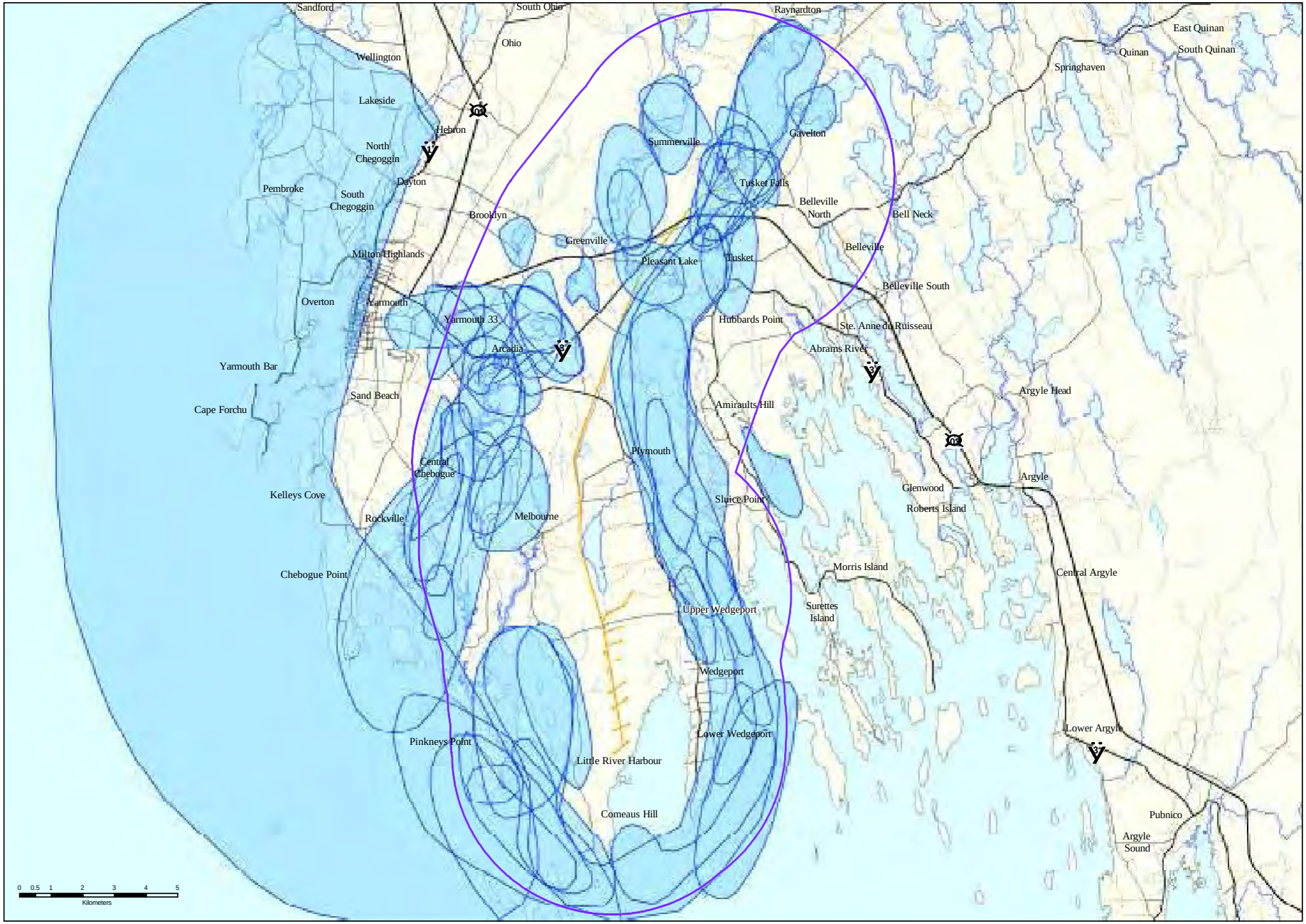
Map C

Mi’kmaq Traditional and Current Fishing Areas



Wedgeport Wind Farm MEKS

Mi'kmaq Traditional and Current Fishing Areas

Legend

- Study Area
- Fishing Areas
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Project Site
- Reserve Land

Disclaimer

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Datum: UTM NAD83 Zone 20
Scale: 1:110,000

Version: 1
20 Mar 2012

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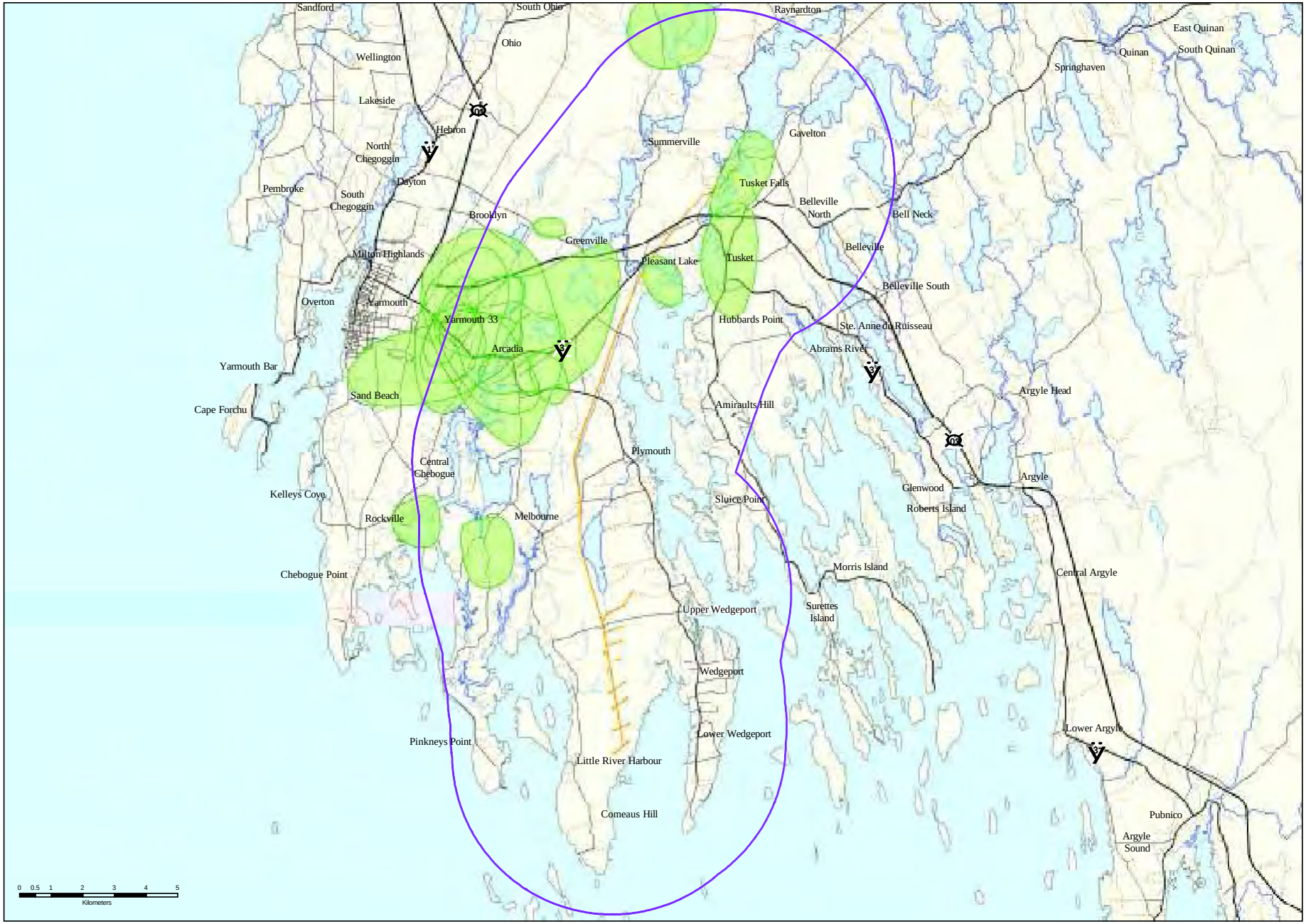
Map D
Mi’kmaq Traditional and Current Gathering Areas



Wedgeport Wind Farm MEKS

Mi'kmaq Traditional and Current Gathering Areas

Legend

- Study Area
- Gathering Areas
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Project Site
- Reserve Land

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

Datum: UTM NAD83 Zone 20
Scale: 1:110,000

Version: 1
20 Mar 2012

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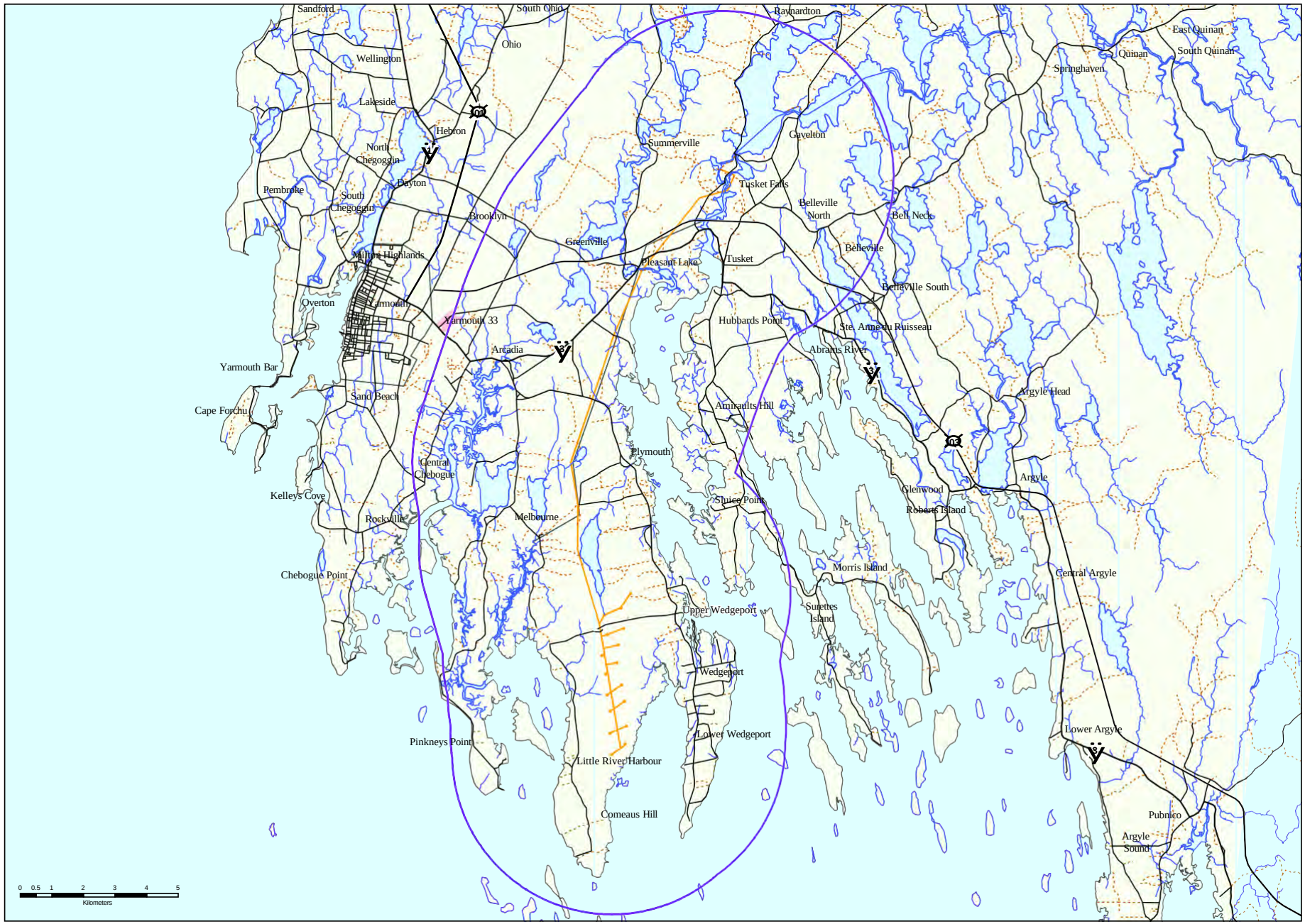
Map E

Mi’kmaq Traditional and Current Cultural Areas



Wedgeport Wind Farm MEKS

Mi'kmaq Traditional and Current Cultural Areas

Legend

- Study Area
- County Border
- Highway
- Trunk Road
- Collector Road
- Local Road
- Loose Surface/Cart Track
- Rivers
- Project Site
- Reserve Land

Disclaimer

This map is a graphical representation of Mi'kmaq ecological knowledge gathered throughout the study, and should not be used for navigation purposes. Features presented may not accurately representaactual topographical or proposed features.

The Mi'kmaq ecological knowledge data presented is a sampling of knowledge held by those interviewed and should not be interpreted as an absolute measure of Mi'kmaq ecological knowledge and land use.

Datum: UTM NAD83
Zone 20
Scale: 1:110,000

Version: 1
20 Mar 2012

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APPENDIX F. 2022 MI'KMAQ ECOLOGICAL KNOWLEDGE STUDY

Wedgeport Wind Farm Project Mi'kmaq Ecological Knowledge Study Report

PREPARED BY: INDIGENOUS ENVIRONMENTAL SOLUTIONS LTD

PREPARED FOR: MCCALLUM ENVIRONMENTAL LTD

NOVEMBER 2022

1.0 Executive Summary

Wedgeport Wind Farm LP (Proponent) is proposing to develop the Wedgeport Wind Farm Project (Project) at a site located in the District of Argyle, Yarmouth County, Nova Scotia. The Wedgeport Wind Farm LP is a partnership between Sipekne'katik First Nation, Elemental Energy, and Stevens Wind Ltd. The Project involves developing 14 wind turbines with a total capacity of 92 Megawatts (Mw).

IES was retained by McCallum Environmental Ltd. (MEL) for the Mi'kmaq Ecological Knowledge Study (MEKS) and determined the scope of this MEKS engagement to include:

1. Coordinate dialogue with interested Mi'kmaq participants on the impacts this Project could have and share Project information.
2. The focus of the discussions would be on the Project footprint area and immediate surrounding areas (MEKSP pg.18).
3. Understand and report on participant discussions.

Correspondence was sent to each Chief and Council scoped into the study on June 27, 2022, with a follow-up on August 5, 2022. Sipekne'katik was the only respondent, and they identified the need for community-driven study methods in accordance with the *Sipekne'katik Governance Initiative Protocol* for this work to be done respectfully. After several discussions, options were identified but formal interview methods could not be completed due to resource constraints. Instead, a Community Notice was developed to help identify potential interview participants. IES is ready to take the next steps and has been invited to present to the new Chief and Council in early December 2022 to discuss possible options, such as continuing to identify MEK interviewees during the Project Community Engagement process.

A previous wind project was proposed for the Project area in 2012. At that time Stantec Consulting Ltd. (Stantec, 2012) completed a Provincial Class 1 environmental assessment which included information on the archeological potential for the Project area and the completion of a Mi'kmaq Ecological Knowledge Study[1].

A site visit to the Project area was completed by IES in June 2022. Prior to the site visit, IES completed a desktop survey to identify different habitat types present in the Project area to provide adequate coverage and identity access routes. IES also reviewed all previously collected data relevant to the MEKS from other Proponent Team members and in particular MEL.

The archeological assessment (Stantec, 2012) included a desktop and field assessment for the Project area. That assessment concluded that the Project area has a low potential of encountering archaeological and heritage resources during construction and that a contingency plan to focus further archaeological work to new construction areas, such as new access roads

[1] Anaia Global Renewable Energis Wedgeport Wind Farm Project. Mi'kmaq Ecological Knowledge Study. 2012. Membertou Geomatics Solutions.

and specific turbine locations, including communicating to the Mi'kmaq if archeological or heritage resources are encountered.

This MEKS completed by IES builds upon the previous MEKS work and has not identified any new or different results.

2.0 Preface

This Mi'kmaq Ecological Knowledge Study (MEKS) has been completed in accordance with Sipekne'katik requirements and the Mi'kmaq Ecological Knowledge Study Protocol (MEKSP). The Wedgeport Wind Farm LP is a partnership between Sipekne'katik First Nation, Elemental Energy Renewables Inc. and Stevens Wind proposing to develop the Wedgeport Wind Farm Project (Project).

Initial discussions with Sipekne'katik revealed a desire for community-driven study methods that aligned with the ***Sipekne'katik Governance Initiative Protocol***, as there is ambiguity in the MEKSP requirements regarding the ownership, storage, and protection of MEK data. IES wrote to each communities' Chief and Council scoped into this study to seek direction and identify other potential concerns regarding how this research could be conducted respectfully for each Mi'kmaw Community.

Sipekne'katik was the only Mi'kmaw community or organization to respond to the IES correspondence for MEKS engagement on the Project. Given the prevailing gap(s) in guidance and process, IES focused on working with Sipekne'katik to develop respectful interim research methods and options for completing this work. After several discussions, options to move forward were developed and presented to the Chief and Council. Regrettably, Chief and Council were in the middle of elections and could not pick this matter up at that time. A community-based MEKS protocol (which can sometimes take years to develop) could not be completed due to the short timelines for this project and capacity constraints. Instead, a Community Notice was developed to help identify potential MEK participants as an interim step.

The MEKS process and mechanism is an important one in Nova Scotia. Unfortunately, there are inconsistencies in the current guidance created by, among other things, the lack of representation at the Assembly of Nova Scotia Mi'kmaq Chiefs for all Mi'kmaw Communities. IES feels the process used for this MEKS and outlined in this document is best practice considering the current challenges. To validate the work to date, a draft MEKS report was provided to Sipekne'katik prior to completion.

IES entered the MEKS space because of the recognized need to have service providers to support development projects in Nova Scotia. IES has communicated with all parties and provided corporate information on qualifications. The evaluation of this MEKS through the environmental assessment process should consider all the information in this report and be done in a transparent process with detailed rationale.

IES

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3.0 Table of Concordance

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Previous MEKS ">" or "<" five years (MEKSP pg.12)	11
Previous MEKS Information (MEKSP pg. 12)	11
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Correspondence Requirements (MEKSP pg. 12-13) • Project Information • Consultant Information • MEKS Information • Purpose • Process • Participant Identification • Information Details • Communities Involved • Time Frame	10-13
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Consultation and Intellectual Property Rights (MEKSP pg. 20) • Explicit Statement • Intellectual Property Rights	11
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4.0 Background and Study Area Description

Wedgeport Wind Farm LP (Proponent) is proposing to develop the Wedgeport Wind Farm Project (Project) at a site located in the District of Argyle, Yarmouth County, Nova Scotia (Figure 1). The Wedgeport Wind Farm LP is a partnership between Sipekne'katik First Nation, Elemental Energy, and Stevens Wind. The Project involves developing 14 wind turbines with a total capacity of 92 Megawatts (Mw).

Figure 1 – Project Location

Note: Graphic Provided by the Proponent Team. The red star represents the approximate center of the site.

The Project also includes developing collector lines, access roads, laydown areas, and a substation within the Study Area (Figure 2). The Study Area below was used by McCallum Environmental Limited (MEL) and others for studies relating to environmental baseline conditions. IES used a broader area that was based on historical and shared information as outlined in other Sections of this report. The Study Area is shown to assist readers with understanding where other studies were completed and the limits within which infrastructure might be placed.

Figure 2 – Study Area

Note: Graphic Provided by the Proponent Team

The Study Area is in the Atlantic Coastal ecoregion (Ecological Land Classification for Nova Scotia, 2017). This ecoregion extends the entire length of Nova Scotia and does not normally exceed 5 kilometers (KM) in width. The ecoregion is characterized by a maritime climate with winds that elevate humidity, low growing season temperatures, along with cool summers and wet winters. Moreover, the ecoregion is characterized by the lack of Acadian Forest species (red spruce, hemlock, sugar maple, beech) and the presence of birch, mountain-ash, downy alder, bayberry and foxberry.

Forested areas are mostly softwoods with soils that are often stony and of glacial origin. Forest growth can be significantly limited by wind, snow and ice resulting in small patch and stand-level disturbances that usually removes the overstory, creating even-aged structure and composition. Uneven-aged and old growth forests are rare.

Marine and coastal habitat includes salt marshes, beaches, dune systems, rocky shores, headlands, barrens, mudflats, and offshore islands.

4.1 Proponent: Wedgeport Wind Farm LP

Wedgeport Wind Farm LP

Suite 2150 – 745 Thurlow St.

Vancouver, BC, Canada V6E 0C5

For more information, please visit:

https://elementalenergy.ca/project/wedgeport-wind/

4.2 MEKS Consultant: Indigenous Environmental Solutions Limited (IES)

IES was retained to complete the Mi'kmaq Ecological Knowledge Study Report (MEKSR), according to the Mi'kmaq Ecological Knowledge Study Protocol, 2nd Edition (MEKSP) and Sipekne'katik requirements for this proposed project. IES is a Mi'kmaq majority owned company with experience in engagement planning including designing/managing traditional ecological knowledge studies. Please see the attached IES Statement of Qualifications (SOQ) for more information on the company capabilities to complete MEKS work (Appendix A).

5.0 Wedgeport Wind Farm Project MEKS Engagement Plan

5.1 Engagement Scope

Outlining the engagement scope for the Mi'kmaq Ecological Knowledge Study (MEKS) is an important step. This MEKS was completed by IES for the Proponent of the Project that has a role in engagement or specific procedural aspects of the consultation process, as determined by the Province of Nova Scotia. According to the Province of Nova Scotia's- *Proponents' Guide: The Role of Proponents in Crown Consultation with the Mi'kmaq of Nova Scotia* (November 2012):

> *"The Province recognizes that some concerns, such as those related to assertion of rights, may arise during discussions between the proponent and the Mi'kmaq that are beyond the scope of the proponent's involvement in a particular project. The Province is committed to consulting with the Mi'kmaq, as appropriate, on matters outside the proponents scope, in accordance with the consultation terms of reference, and as required by provincial regulations and legislation."*

Additionally, the Mi'kmaq Ecological Knowledge Study Protocol (MEKSP), 2nd Edition, states:

> *"A MEKS and related discussions, communications or documentation cannot be used or interpreted as "consultation" (MEKSP pg.11).*

Finally, the MEKSP is governed by the Assembly of Nova Scotia Mi'kmaq Chiefs (ANSMC)/ Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) for which Sipekne'katik is not a member. Sipekne'katik raised this concern with IES early in the MEKS engagement and they have been an active participant in the development of this report to ensure Community requirements are respected.

Based on this information, IES determined the scope of this MEKS engagement to include:

1. Coordinate dialogue with interested Mi'kmaq participants on the impacts this Project could have and share Project information.
2. The focus of the discussions would be on the Project footprint area and immediate surrounding areas (MEKSP pg.18).
3. Understand and report on participant discussions. *

*** Note:** Based on this, collecting confidential information is beyond the scope of Proponent engagement and therefore requires direction from each participating Community's Chief and Council on information regarding intellectual property ownership/protection (MEKSP p. 20, 21) and for participant consent form requirements (MEKSP pg. 17).

Not "Consultation"

This MEKS is not intended to be interpreted as "consultation" for the purposes of justifying an infringement on the existing Aboriginal and Treaty Rights of the Mi'kmaq of Nova Scotia.

Any MEK contained within this study is subject to the intellectual property rights of the Mi'kmaq of Nova Scotia, which they individually and collectively hold. To ensure that intellectual property rights are protected, IES has worked with each participating Chief and Council on protocols for the ownership, the storage, and the protection of MEK data collected for this MEKS.

This MEKS was completed to satisfy the MEKSP and Sipekne'katik requirements. IES developed a workplan with each participating Community, implemented the workplan, and presented the results in a Draft of this MEKS to each participating Community for review/input prior to finalization.

5.2 MEKS Engagement Timelines

Engagement timelines for the MEKS needed to consider the following:

- According to the MEKSP:

  "The MEKS should be completed in an appropriate time manner that is consistent with the Environmental Assessment (EA) approval process for the Project".

- While the Proponents Guide for EA Projects in Nova Scotia states:

  "Engagement should allow a reasonable amount of time that is appropriate and proportionate in respect of the decision being made for the Mi'kmaq to review information, hold internal discussions and respond."

In addition, taking into consideration that a MEKS for a similar project was completed (2012) for this Project area that concluded "…Mi'kmaq traditional uses both past and present do not occur within the Project Study Area…" (*Stantec, 2012*), the timeline for this current MEKS work was decided to be from June 6, 2022- November 15, 2022.

5.3 MEKS Limitations

The MEKS process is informed by the Province of Nova Scotia's Proponents Guide and the ANSMC via the MEKSP. However, not all Mi'kmaw Communities are a part of the ANSMC. The lack of guidance in this regard is a limitation to this MEKS.

Moreover, participants in MEKS often are concerned about how their collected information is going to be used and by whom. There have been several research projects in each Nova Scotia Mi'kmaq Community, and there is a general, well-known fatigue in participating in

interviews/surveys. For this reason, IES took the respectful approach and made the decision that no confidential information will be collected unless there is an understanding of the following (participant consent requirements MEKSP pg. 17):

- Who owns the information collected?
- Where is the information going to be stored?
- How will it be protected?
- Who has access to it?

If participants identify confidential information they want to contribute to this work, IES will work with each participating Chief and Council on how they want to proceed with the limitations noted above.

IES is also aware that there is MEK information in many different organizations that maybe helpful to this current MEKS report. For this reason, those organizations were included in the engagement plan with the aim of obtaining information relevant for the Wedgeport Wind Farm Project and fulfill MEKSP requirements (MEKSP pg. 16). Lack of participation is a limitation for this MEKS.

Another limitation to this MEKS is the time of year the work was completed (some MEK providers are not available due to traditional activities at different times of the year). Therefore, it is possible that not all activity users were available to participate in this MEKS.

5.4 Respect

When engaging a Mi'kmaw Community, The MEKSP states that consultants:

> *"…shall conduct themselves and their activities in a manner respectful of Mi'kmaw cultural norms and the values of the community" (MEKSP pg. 14).*

Based on this, specific Mi'kmaw engagement for this MEKS report was initiated with each scoped in Chief and Council first to understand Community requirements (see Section 5.7). Organizational engagement was then conducted based on Chief and Council instructions and/or to fulfill MEKSP requirements (MEKSP p. 16).

5.5 Principles/Policies

The MEKSP contains several principles that need to be achieved to complete the work. These include:

- The MEKS must be completed in a respectful way (MEKSP pg.14)
- Participants must be recognized by their Mi'kmaw Community as a credible provider of MEK data (MEKSP pg.16)
- The work must consider the preferences of participants (location of the dialogue, language requirements, information requirements, compensation, timelines etc. MEKSP pg.16-17)

- The work needs to be done early in the process and consistent with environmental assessment process timelines (MEKSP pg.12)

IES can confirm that all the above noted principles were adhered to for the Project MEKS.

5.6 IES Engagement Process

Step 1: Correspondence was sent to each Chief and Council (Section 5.7) scoped into the study on June 27, 2022, with a follow-up on August 5, 2022 (copies of the initial Community correspondence can be found in Appendix B) The purpose of this correspondence was to:

a. Seek direction on process.
b. Understand if the Community is interested in dialogue on the Project.
c. Identify Community participants.

Step 2: Correspondence was sent to supporting organizations (Section 5.8) based on the direction received from Chief and Council, IES experience and MEKSP requirements (MEKSP pg. 16) on July 5, 2022 (Appendix C). The purpose of this correspondence was to seek secondary information and identify potential MEK participants.

Step 3: Once Community participants were identified by their Chief and Council, IES intended to contact each to discuss interview requirements. However, Sipekne'katik was the only respondent, and they identified the need for Community specific methods for this work to be done respectfully.

5.7 Mi'kmaq Ecological Knowledge Study Community Initiation

IES determined the following communities should be included in this MEKS based on the following rationale:

Sipekne'katik- This MEKS engagement builds on the previous Project engagement. Sipekne'katik participated in early discussions where the project was introduced, project updates were provided and partnership opportunities with the Proponent were discussed during the Winter, 2022.

Acadia First Nation- This MEKS engagement builds on previous Project engagement. The Acadia First Nation participated in early discussions where the project was introduced, project updates were provided and partnership opportunities with the Proponent were discussed during the Winter, 2022.

Glooscap First Nation- This MEKS engagement builds on previous Project engagement. The Glooscap First Nation participated in early discussions where the project was introduced, project updates were provided and partnership opportunities with the Proponent were discussed during the Winter, 2022.

Also, the KMKNO was copied for each ANSMC Community to address MEKSP requirements (MEKSP P. 12) and ensure the ANSMC was aware of this work early in the MEKS process.

5.8 Mi'kmaq Ecological Knowledge Study - Organizational Initiation

Organizational Mi'kmaq Ecological Knowledge Study initiation was completed to satisfy MEKSP requirements to demonstrate efforts to engage a broad range of participants and solicit information. This engagement included correspondence to the following organizations on July 4, 2022:

- The Confederacy of Mainland Mi'kmaq
- Native Women Association of Nova Scotia
- Kwilmu'kw Maw-klusuaqn Negotiation Office
- The Native Council of Nova Scotia
- The Mi'kmaq Conservation Group

The purpose of this engagement was to respectfully involve the organizations to direct IES by identifying potential knowledgeable participants that were not identified through Community engagement and to seek information that may be helpful to the MEKS (MEKSP pg. 16).

6.0 MEKS Methods

Guidance for this work includes the MEKSP and Sipekne'katik requirements.

According to the MEKSP, when an MEKS Report is required, the first step is to send correspondence to serve as a letter of intent for the work to be completed. The correspondence is to be sent to the ANSMC via the KMKNO, directly to each Chief and Council for each ANSMC Community anticipated to be involved in the study and each supporting organization (not all the Communities involved in this MEKS are part of the ANSMC and some members of the ANSMC may not be part of the KMKNO. Therefore, direction was sought via the engagement request letters from each ANSMC Chief and Council).

Sipekne'katik was engaged separately and at the direction of their Chief and Council. After initial discussions, the Community identified the need to have a Sipekne'katik MEK Protocol that respects the Sipekne'katik Governance Initiative and developed options, as an interim step, to respectfully engage the Community on participating in this MEKS.

The MEKSP also contains several principles that need to be achieved to complete the work. These include the MEKSP must be completed in a respectful way, participants must be recognized by their Mi'kmaw Community as a credible provider of MEK data, the work must consider the preferences of participants (location of the dialogue, language requirements, information

requirements, compensation, timelines etc.) and that the work needs to be done early in the process and consistent with environmental assessment process timelines for the Project.

This MEKS was provided to each participating Mi'kmaw Community as a draft for review and validation.

7.0 Interviews

The MEKSP identifies the following requirements when conducting interviews with knowledge holders:

1. **Survey requirements** (MEKSP pg. 15):
    A. Historic and Current Use/Occupation
    B. Burial Sites
    C. Hunting Areas
    D. Fishing Areas
    E. Spiritual Sites
    F. Plant Gathering Areas
    G. Significant Cultural Areas

2. **Consent Requirements** (MEKSP pg.17):
    A. The dialogue is not consultation regarding Aboriginal and Treaty Rights
    B. Participation is voluntary
    C. Dialogue can end at any time
    D. There is no requirement to participate if uncomfortable
    E. Identity will be kept confidential and
    F. Information shared may become public.

3. **Intellectual Property Rights**- *"The MEKS must include a provision acknowledging that the MEK contained within the Study is subject to the intellectual property rights of the Mi'kmaq of Nova Scotia, which they individually and collectively hold."* (MEKSP pg.20).

Interviews were planned for participants identified in the engagement process with the above MEKSP requirements for participating ANSMC Communities. IES committed to completing a workplan to organize and plan the engagement and, due to Covid- 19, this work was to be primarily completed via phone and online services (in person dialogue was also available depending on participant requirements). IES offered to contact each participant identified by their Community directly to arrange the dialogue and provide project information.

IES advised each potential participating Community that the scope of the dialogue was to focus on the potential impacts the Project could have. Consent forms would be provided to each participant that considered the requirements listed above and that no confidential information would be it collected unless each participating Chief and Council provided direction on the storage and protection of information to satisfy the intellectual property rights requirements.

As discussed in other Sections, Sipekne'katik was the only respondent to the MEKS engagement request and identified early in the dialogue that Community requirements would need to be understood and developed prior to conducting interviews. After many discussions, options were identified but formal interview methods could not be completed. However, a Community Notice was developed to help identify potential participants to fully understand the need and help identify the next steps to conducting respectful interviews/ intellectual property rights

requirements. IES remains ready and available to take the next steps and has been invited to present to the new Chief and Council in early December 2022 to discuss possible next steps such as continuing to identify MEK providers during the Project Community Engagement process.

8.0 Historical Information

The MEKSP, requires the collection of primary and secondary information sources (MEKSP pg. 18). According to the Protocol, information

> *"… that is broad in scope, not specific to the MEKS area, and of little relevance to an understanding of the Mi'kmaw relationship to the study area is not to be included in the MEKS."*

The Protocol further clarifies this as:

> *"All historical information gathered must be relevant to the Project area and its close surrounding area".*

8.1 Cape Sable Region- Municipality of Barrington and Surrounding Areas

The Cape Sable Region is the historical term for the broad area that the Project is located. According to the Cape Sable Historical Society (barringtonmuseumcomplex.ca), the Municipality of Barrington and surrounding areas make up the region of Cap de Sable (Cape Sable). This region has several areas that also have Mi'kmaq place names. These include:

1. Cheboque was known as Utkubek or "a spring of water"
2. Little River Harbour was known as Kespoospaak or "where they? catch beavers"
3. Argyle was known as Bapkoklek or "always running down"

   *(**Source**: List of Micmac Names, Elizabeth Frame, 1892)*
4. Wedgeport was known as Chebec or "the narrows"

   *(**Source**: Nova Scotia Place Names, Thomas J. Brown, 1922)*
5. Comeau's Hill was known as Mkadom or "haunt of the black-backed gull"

   *(**Source**: Membertou Geomatics Solutions, Anaia Global Renewable Energies Wedgeport Wind Farm Project, undated)*

Moreover, The Municipality of Argyle (munaargyle.com) states:

> *"Prior to 1755, present-day Argyle lay within Cap-Sable (Cape Sable), an area stretching along the southwestern coast of the province, roughly from what is now Yarmouth (Cap-forchu) to Baccaro in today's Shelburne County."*

According to the Nova Scotia Archives (archives.novascotia.ca), an order was made in 1786 by Surveyor General C. Morris to provide:

> *"A licence for the Indian Bearers to occupy their lands and usual hunting grounds unmolested" and "to accommodate the Bearers for Grants near Cape Sable agreeable to their wishes".*

According to author and historian Daniel Paul (www.danielnpaul.com) who wrote in 2003:

> *"… this area was once the home of a large population of Mi'kmaq. In fact, they were so numerous that many British referred to the Mi'kmaq in general as Cape Sables" and,*
>
> *"During colonial times, the Mi'kmaq in many other areas of Nova Scotia - for example, Shubenacadie and Bear River - were badly decimated, but a remnant survived to carry the day. In the Cape Sable area, now inhabited by a considerable population of European descent, many of whom have some traces of Mi'kmaq blood in them, only the ghosts of a once vibrant Mi'kmaq population remain!"*

Finally, Membertou Geomatics Solutions completed a previous MEKS for the area for "Anaia Global Renewable Energies Wedgeport Wind Farm Project" (undated):

> *"The surviving known Mi'kmaq Place names between Yarmouth and Cape Sable indicate a strong Mi'kmaq presence in the vicinity of the Project Area. Archaeology also indicates a presence that predates European contact by at least 2500 years before present and possibly as early as 4000 years before present."*

8.2 Present Day Yarmouth and Acadian Shore

The Yarmouth and Acadian Shore is the broad area the Project is located. According to Yarmouthandacadianshores.com, **"… the Mi'kmaq are the predominant Aboriginal group, with Archeological evidence that traces the Mi'kmaq back at least 4,000 years in Yarmouth and Acadian Shore".** The site also provides a link to the Acadia First Nation (Acadiafirstnation.ca) for more information.

8.3 Project Area and Close Surrounding Area

A previous wind project was proposed for the Project area in 2012. At that time Stantec Consulting Ltd. (Stantec, 2012) completed a Provincial Class 1 environmental assessment which included information on the archeological potential for the Project area and the completion of a Mi'kmaq Ecological Knowledge Study.

The archeological assessment (Stantec, 2012) included a desktop and field assessment for the Project area. That assessment concluded that the Project area has a low potential of encountering archaeological and heritage resources during construction and that a contingency plan to focus further archaeological work to new construction areas, such as new access roads and specific turbine locations, including communicating to the Mi'kmaq if archeological or heritage resources are encountered.

Historical land use by settlers in the Project area (Stantec, 2012) is thought to be predominately fishing and the first non-Mi'kmaw settlement was likely along the western shore and after the

Town of Wedgeport was established. Aerial photographs from 1945 show some trails being present but nothing to indicate the area was heavily settled.

The closest non-Mi'kmaw settlement to the Project site is Little River but it is not known when the settlement was established, and the Project area is thought to not have had a pre-Expulsion Acadian settlement (Stantec, 2012).

8.4 The Sipekne'katik Relationship to the Project Location

The Centralization Policy of 1942 was significant processes created to assimilate the Mi'kmaq of Nova Scotia into non-native communities. In Nova Scotia, centralization involved two Mi'kmaw Communities- Sipekne'katik and Eskasoni and the goal of this policy was to remove the Mi'kmaq from their traditional lands and destroy Mi'kmaq culture. This policy has resulted in members of Sipekne'katik that have close relationships to a broad area of Nova Scotia (and other parts of Canada/the United States). Research on the historical and genealogical connections that Sipekne'katik has to any specific area needs to be done to understand these Community connections and the methods to do this work needs to be determined. Regardless, Sipekne'katik has a high likelihood of having close historical connections to the land in this Project location.

8.5 Use of Lands and Resources by the Mi'kmaq for Traditional Purposes

Use of Lands and Resources by the Mi'kmaq for traditional purposes was also evaluated by Stantec, 2012. A Mi'kmaq Ecological Knowledge Study (MEKS) was completed by Membertou Geomatics Solutions (MGS). According to the environmental assessment, "…. Mi'kmaq traditional uses both past and present do not occur within the Project Study Area…." (Stantec, 2012).

According to the previous MEKS completed by MGS:

- "Hunting, including hunting of rabbits, deer, partridge, and pheasant occurs to the north of the Project area with some hunting along the transmission line. Fishing activity, generally lobster, occurs in several areas outside the Project area…" (MGS, 2012)
- "Gathering activities, mostly berry picking, occur north and west outside of the Project area in the areas surrounding Yarmouth Reserve and Arcadia" (MGS, 2012).

The EA further states- "***Based on the information gathered and presented in the MEKS, Membertou Geomatics concluded that the proposed Project could potentially have an effect on Mi'kmaq traditional use and recommend that traditional use activities be considered during all phases of the Project***" (Stantec, 2012)

9.0 Site Visit

A site visit to the Project area was completed by IES in June 2022. Prior to the site visit, IES completed a desktop survey to identify different habitat types present in the Project area to provide adequate coverage and identity access routes. IES also reviewed all previously collected data relevant to the MEKS from other Proponent Team members and in particular MEL.

Several plant species (see Appendix D) known to be traditionally used have been identified on the site by the Project Team. These include:

Latin Name	**Common Name**	**Mi'kmaq Name(s) ***
Kalmia angustifolia	Sheep Laurel	
Cornus sericea	Red osier dogwood	WJKULJE'MANAQSI
Corylus avellana	Common hazel	MALIPQWANJ
Acer rubrum	Red Maple	MEGWE'G SNAWE
Acer pensylvanicum	Striped maple	MIMKUTAQO'Q
Acer saccharum	Sugar maple	SNAWEY
Fagus grandifolia	American beech	
Amelanchier canadensis	Juneberry	
Picea rubens	Red Spruce	MEKWE'K KAWATKW
Rubus pensilvanicus	Pennsylvania blackberry	
Linnaea borealis	Twin flower	
Trifolium repens	White clover	
Abies balsamea	Balsam fir	STOQN
Larix laricina	Eastern Larch	APU'TAM'KIE'JIT
Sorbus americana	Mountain ash	E'PSEMUSI
Vaccinium Angustifolium	Lowbush Blueberry	PKUMANAQSI
Aronia arbutifolia	Red chokeberry	
Aronia melanocarpa	Black chokeberry	
Dennstaedtia punctilobula	Eastern hayscented fern	
Populus grandidentata	Large Toothed Aspen	
Gaultheria hispidula	Snow Berry	KNA'JI'JK
Cornus canadensis	Bunchberry	WSO'QMANAQSI'L
Plantago major	Common Plantain	WIJIKANIPKL
Alnus viridis	Downy Alder	TUPSI
Coptis trifolia	Gold thread	WISAWTAQJI'JKL
Ledum groenlandicum	Labrador Tea	APUISTEKIE'JI'JIT
Aralia nudicaulis	Sarsaparilla	WOPAPA'KJUKAL
Alnus incana	Speckled Alder	TUPSI
Populus tremuloides	Trembling Aspen	MITI
Betula papyrifera	White Birch	MASKWI
Betula alleghaniensis	Yellow Birch	NIMNOQN

* *To be determined from Interview Process*

Animal species identified during the IES site visit includes Ruffed grouse, White-tailed deer, Fox, Rabbits, Redtail Hawks.

10.0 Results

A. The Project location is in an area that has historically been used by the Mi'kmaq of Nova Scotia.
B. A Mi'kmaq Ecological Knowledge Study (MEKS) was previously completed by Membertou Geomatics Solutions (MGS) in 2012 for a similar project in the same area. This MEKS completed by IES builds upon the previous work and has not identified any new or different results.
C. Sipekne'katik identified a gap in the MEKSP because they are not part of the ANSMC. Guidance is needed for MEKS providers on how this gap should be respectfully addressed.
D. No ANSMC Communities nor supporting organizations responded to the engagement requests from IES. Given that this area was already studied and for development in 2012 for a similar wind project this is likely due to the lack of interest in this Project. Without correspondence from other communities, IES determined it was appropriate to proceed as opportunity was provided, but no responses were received.
E. Community engagement resulted in detailed discussions with Sipekne'katik leaders. However, no specific Community participants were identified as having MEK data for the Study Area. IES remains hopeful and ready to respond if participants are identified through the Community Notice and after Community Elections. A draft of this report was provided to Sipekne'katik and they are supportive of it for the purposes of the Project.
F. Several flora and fauna species used by the Mi'kmaq of Nova Scotia were identified. However, none of the species have known Mi'kmaq conservation concerns and no concerns were identified in the MEKS engagement.

Appendix A- IES SOQ

Indigenous Environmental Solutions- Statement of Qualifications

May 2022

SOQ May 2022

Indigenous engagement or consultation is a complicated subject in Canada. In Nova Scotia, this is especially true for companies that propose development projects or complete crown permitting requirements because of the ambiguity between the required Proponent engagement activities and the crown consultation activities with the Mi'kmaq of Nova Scotia. The current Crown-Mi'kmaq consultation process and, specifically the Proponent's role, is ambiguous. This makes project risk difficult to assess and often leaves the Proponent with a less than desirable relationship with the rightsholders.

IES is a majority owned Mi'kmaw company that is unique. Collectively our owners have over 50 years' experience working with the Project developers and the Mi'kmaq in engagement and consultation activities, with specific expertise relative to development projects requiring provincial and federal permits/approvals. This experience has been gained from the Mi'kmaq perspective, the Crown perspective, the permitting process perspective, and the Proponent perspective.

This gives IES the necessary expertise to provide the following services:

1. **Engagement or Consultation**- These processes can be confused by Proponents and the distinction between the two is important. IES can provide guidance on the best approach for you to take, given the type of project and location being proposed.
2. **Engagement Risk Assessment**- Completed early in the process, IES will review project information and provide an assessment of project risk associated with the engagement aspects. The scope of this assessment will be to outline the potential concerns that may need to be addressed during the engagement process and identify specific engagement activities to minimize the risks.
3. **Engagement Training**- Develop organizational or project specific training tools to enhance Indigenous engagement. This training can be delivered to Proponents, consultants assisting Proponents, NGOs and Indigenous/non-Indigenous communities or interested groups.
4. **Engagement Program Development**- Develop/review project specific engagement plans and provide advice to the project team (Proponent/consultants) on timelines and advice on how to navigate the Crown-Mi'kmaq Consultation process.
5. **Mi'kmaq Ecological Knowledge Studies (MEKS)**- Prepare the MEKS to current standards and with the participation of knowledgeable Mi'kmaq communities.
6. **Consultation Support**- Participate, as required, in the consultation phase of the process to assist the Proponent engagement activities and to protect the Proponent-Mi'kmaq relationship (provide advice to minimize risk to the Proponent-Mi'kmaq relationship because of the consultation process).
7. **Mutual Benefits Assessments and Advice** – Assist in determination of appropriate benefits and/or programs for proponents to consider with the Mi'kmaq and provide advice on service providers and/or frameworks for benefits delivery.
8. **Relationship/follow-up Support-** Provide advice and services to ensure commitments made to the Mi'kmaq are followed-through with and provide advice to the Proponent on how the relationship can be fostered into the future, if necessary.

Managing Project Risk and Costs

The services listed above will help you reduce project risks as you proceed through the regulatory processes. IES skills and knowledge can help you reduce and control consultation and/or engagement costs.

Collaboration Details

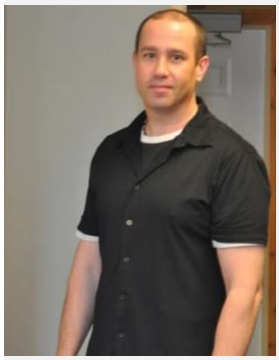
The owners of IES have been collaborating and delivering results for many years on a wide range of subjects related to Indigenous and non-Indigenous environmental matters. This collaborative relationship has been used to develop strategies to take projects from concept stage through to successful conclusions for Proponents, communities, and organizations. This well-developed collaborative model is a key asset and a distinguishing feature of what IES can bring to your projects and organizations.

Project Experience

Project	Roles	Parties Involved	Key Outcomes
Black Bull Resources - White Rock Mine	**Peter O**: Project Permitting **Michael C**: Mi'kmaq Knowledge Study and Indigenous engagement	NS Government, Federal agencies, Proponent, local Indigenous and non-Indigenous communities/organizations	Identified rare species of concern for protection and areas of Mi'kmaq interest for mine layout and operations planning Successful Mi'kmaq engagement and Project approval

Project	Roles	Parties Involved	Key Outcomes
Fundy Gypsum – Miller's Creek Mine Expansion	**Peter O**: Project Permitting **Michael C**: Mi'kmaq Knowledge Study and indigenous engagement	NS Government, Federal agencies, Proponent, local Indigenous and non-Indigenous communities/organizations	Identified concerns for protection and areas of Mi'kmaq interest for mine layout and operations planning. Successful Mi'kmaq engagement and Project approval
Savage/ Pasminco Resources - Gays River Mine	**Peter O**: Project Permitting **Michael C**: Mi'kmaq Knowledge Study and Indigenous engagement	NS Government, Federal agencies, Proponent, local Indigenous and non-Indigenous communities/organizations	Identified concerns for protection and areas of Mi'kmaq interest for mine layout and operations planning Successful Mi'kmaq engagement and Project approval
First Nations Environmental Network	**Michael C**: Co-Founder/ coordinator **Peter O**: Provided key technical inputs and presentations on issues and topics for members	Network of Indigenous communities/organizations and the Federal family	Connected communities with resources/tools and enhanced technical knowledge in Indigenous communities on environmental matters

Project	Roles	Parties Involved	Key Outcomes
Hydraulic Fracturing 3rd Party Technical Review	**Michael C**: Lead, engagement **Peter O**: Advisory support including providing key technical advice and guidance	NS Government, Industry, academia, local Indigenous and non-Indigenous communities/organizations	Identified concerns for environmental protection and elements of Mi'kmaq interest for informed decision making. Successful Mi'kmaq engagement
Alton Gas 3rd Party Technical Review	**Michael C**: Lead, engagement **Peter O**: advisory support including providing key technical advice and guidance	NS Government, Industry, academia, local indigenous and non-Indigenous communities/organizations	Identified concerns for environmental protection and elements of Mi'kmaq interest for informed decision making. Successful Mi'kmaq engagement



Michael Cox, BSc Biology

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Professional Overview: Michael is a biologist by training and education and has 25 years of experience working in Indigenous Engagement/Consultation processes and initiatives. Michael has experience working for the Mi'kmaq Government, the Peskotomuhkati Nation at Skutik, the Government of Canada, Sipekne'katik, Bear River First Nation and many Indigenous organizations in the capacity of completing science research, project management for initiatives that support government-to-government discussions, community engagement and formal consultation planning/process. As part of this experience, Michael has learned key engagement and consultation elements relating to Crown approval processes for environmental impact assessment, environmental site assessments other permitting/approval requirements. In all these roles Michael has sought to engage all parties in a respectful and meaningful way appropriate to their rights, interests, and abilities.

Indigenous engagement processes and formal consultation processes are complicated and different. Although both are related, the goal for engagement is to build a relationship with the rights-holders for a specific development to identify the potential impacts, through interest-based dialogue, that the development could have from the Indigenous perspective. Alternatively, consultation is a government-to-government process of identifying and evaluating potential impacts to rights and claims. Industry has a role in engagement which is sometimes difficult to understand because of the complexity of consultation elements.

IES has developed a series of products and services to support Industry to develop comprehensive and complete engagement planning (including Mi'kmaq Ecological Knowledge) so that the roles and responsibilities of all parties to the engagement and consultation related to a development project are understood.

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Engagement and Consultation Related Experience (select)

Peskotomuhkati Nation at Skutik | Consultation Adviser| 2019-2021

- Lead consultation files and complete technical research for the Peskotomuhkati Nation. This role includes attending all project meetings, developing, and delivering position papers, preparing presentations, and briefing materials to and for the Peskotomuhkati Nation.
- Provide advice and guidance to the Nation and regulators/Proponents on matters regarding the potential impacts of a variety of project types (mining, forestry, aquaculture, fisheries, oil, and gas etc.) to Peskotomuhkati Rights and title.
- Support and network with First Nation Organizations and government departments on technical areas of consultation.
- Develop and evolve the Peskotomuhkati Consultation Process.

Sipekne'katik| Consultation Adviser | 2018

- Established the Sipekne'katik Consultation Process by working with the Crown, the Chief and Council and the Community.
- Lead consultation files and completed technical research for Sipekne'katik;
- Developed position papers, discussion papers, briefing notes and correspondence on a variety of consultation issues.

Canadian Environmental Assessment Agency | Indigenous Adviser | 2018

- Provided expert advice to Senior Management on consultation issues with First Nations.
- Authored several environmental assessment related documents including the adequacy of consultation processes for the consideration of the President of the Agency.
- Worked with all rights holders participating in environmental assessments on many issues relating to rights and claims.

Kwilmu'kw Maw-klusuaqn Negotiation Office | Consultation Researcher| 2013-2017

- Lead consultation and negotiation files and complete technical research in support of the on-going discussions between the Mi'kmaq of Nova Scotia, Canada, and Nova Scotia. This role includes attending all project meetings, developing, and delivering position papers, preparing presentations, and briefing materials to and for the Assembly of Nova Scotia Mi'kmaq Chiefs.
- Provide advice and guidance to regulators and Proponents on matters regarding the potential impacts of a variety of project types (mining, forestry, aquaculture, fisheries, oil, and gas etc.) to Mi'kmaq Rights and title. This includes providing expert advice on Mi'kmaq Ecological Knowledge Studies, Mi'kmaq Fisheries Studies and other mechanisms that are necessary to identify the potential concerns for both land and ocean-based projects.
- Support and network with Mi'kmaq Organizations on technical areas including Species at Risk, Water and Wastewater, Fisheries, Forestry, Mining, Oil and Gas and Archaeology to inform the Assembly of Nova Scotia Mi'kmaq Chiefs.

Bear River First Nation | Fisheries and Livelihood Consultant | 2018-2019

- Develop and implement governance mechanisms for the Bear River First Nation to be able to exercise rights and responsibilities.
- Coordinate engagement with the Crown and the Bear River First Nation.
- Develop programming to support the implementation of Netukulimk.

North Shore Mi'kmaq District Council | Manager, Environmental Services | 2008-2013

- Created and managed the Environmental Services Program that provided the necessary environmental and natural resources support and

expertise to member communities and all levels of government.
- Established a Traditional Ecological Knowledge Program. This program involved identifying and interviewing knowledge holders, developing GIS tools to support confidential storage of the information, developing questionnaires, and developing consent forms.
- Established a Species at Risk forum for the New Brunswick Mi'kmaq.
- Completed a sea level rise study for the Mi'gmaq of New Brunswick.
- Established the Circuit Rider Training Program that provides expertise to all water and wastewater operators in the Atlantic Region. The focus of the program is to achieve the necessary certification for each operator, but it also provides emergency support to communities when needed.
- Coordinated the Atlantic First Nations Environmental Network which had representation from all First Nation Communities/technical organizations in the Atlantic Region.

Confederacy of Mainland Mi'kmaq | Director, Lands, Environment and Natural Resources | 1999-2008

- Managed the Lands, Environment and Natural Resources Programs (including technical engineering services). This including managing 14 full time positions.
- Developed the current Mi'kmaq Ecological Knowledge Study mechanism that was designed to be incorporated into Environmental Assessment processes to identify potential Mi'kmaq concerns with development projects.
- Established the Mi'kmaq Environmental Services Program to provide expertise and support to member communities on many environmental issues of concern such as environmental assessment processes, species at risk, fisheries, and forestry.
- Provide consultation services to member communities.
- Participated in exploratory discussions with the Canadian Environmental Assessment Agency on the development of community specific regulations under the Canadian Environmental Assessment Act.
- Developed organizational policies and strategic plans for the organization and member communities.

Indian and Northern Affairs Canada | Environmental Officer | 1995-1999

- Managed the regional Environmental Protection Program for INAC.
- Developed relationships with First Nation Communities and Organizations to address environmental investigations and remediation projects.
- Advised Senior Management and INAC programs on environmentally related issues and prepared briefings for the Minister's Office frequently.
- Participated in providing expert advice to CEAA and Public Works and Government Services Canada on environmental assessments when First Nation issues arose.

Technical\Field Experience (select)

Fisheries and Oceans Canada | Biologist | 1994

- Coordinate crews with Oromocto First Nation, Kingsclear First Nation, St. Mary's First Nation, Woodstock First Nation at counting fence on Nashwaak River.
- Collected gaspereau samples at Mactaquac Dam for scales, species identification and otolith collection

Environment Canada | Environmental Engineering Officer| 1994

- Collected effluent samples at federal institutions.

Peter Oram, P.Geo

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Professional Overview: Peter is an environmental scientist by training (B.A Geol/Geog minor in biology, Mount Allison 1987) and has 35 years of progressively more complex and involved roles as project manager for environmental projects for a variety of private and government clients in Canada, the Caribbean, and the US. Peter did two years of exploration work for a NS based mining company before a 33-year career in environmental consulting. Peter was Principal in Charge of the Halifax office for a Canadian based multi-national from 2005 to 2014 and is a past Executive Committee member for that firm. Peter has lectured at Dalhousie University and Saint Mary's University in the Environmental Science and Mining Engineering Departments and is routinely involved in the development and review of legislation associated with mine and aggregate operations in Nova Scotia and beyond. Peter is an active member of the Biodiversity Council of Nova Scotia.

Peter has been aware of the special role First Peoples should play in decisions relative to land use since a chance brookside meeting with a Mi'kmaq Elder during a gold exploration program in 1987. He has sought to educate himself on how to respectfully engage and involve First Peoples in projects throughout his career. The formation of IES is a natural evolution of this journey as his Partner is Mi'kmaq and they have had a 20-year working relationship through our many employers and projects. Peter has developed and implemented First Peoples engagement programs for projects including mining, landfills, aggregates, highways, and industrial waste remediation. Peter has completed projects on all NS and PEI Bands and several NB Bands directly for the Bands, regional organizations, or federal government clients.

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Engagement and Consultation Related Experience (select)

Project Manager | Mi'kmawey Debert Centre Development | Confederacy of Mainland Mi'kmaq (CMM) | 2015-2021

Peter was Project Manager for several activities to support the development of the Centre including site assessment and remediations activities, ecological assessment work for site layouts, input to sessions involving the Elders Advisory Group and providing advisory support direct to CMM staff.

Environmental impact Assessment Lead Boat Harbour Assessment and Remediation Project – NS Lands 2016-2021

Role involved the development of the data collection programs, coordination of specialist sub consultants and staff, facilitation of workshops, Pictou Landing First Nation involvement and input at various workshops through the federal Impact Assessment process leading to preparation of submissions to the Impact Assessment Agency of Canada (IAAC).

Project Director
Moose River Gold Mine Permitting | DDV Gold now Atlantic Gold | 2004 - 2021

This project is a 4000 tonne per day surface gold operation beginning construction in Q1 2016. Project duties included design and management of baseline environmental data gathering programs for surface water, groundwater and habitat, preparation of permit application documents (Environmental Approval, Mining Permit, Industrial Permit and Development Permit), liaison with provincial "One Window Committee" members and other provincial and federal regulators, landowner liaison, public information sessions, and preparation of claims assessment reports. Ongoing projects components include management of drill program and environmental monitoring programs, Mi'kmaq Ecological Knowledge Studies (MEKS) and First Nations engagement.

Project Director
Gays River Lead | Zinc Mine Re-Development Permitting | Selwyn Resources Inc. |
2008 - 2012

Project Director for Gays River Lead/Zinc Mine Re-Development involving management of project components such as monitoring plan development, regulator liaison, First Nations involvement, public information sessions, mine dewatering program development, archaeological investigations reclamation plan development and regulatory compliance reporting and compliance monitoring programs. Peter developed and implemented all Mi'kmaq engagement programs and MEKLS aspects including development of an artifacts assessment program and Mi'kmaq involvement in an assessment program.

Project Director
Miller's Creek Gypsum Mine Extension Environmental Assessment | CGC Inc. |
2003 - 2012

Project Director for Millers Creek Gypsum Mine Development involving environmental baseline studies and overall permitting management of all environmental baseline programs, public consultation, regulator liaison, landowner discussions for water supply replacement plans, and preparation of environmental assessment reports. The project was for a 50-year mine extension of over 400 hectares in size and 2 million tonnes per year and was successfully permitted. Peter developed and implemented all Mi'kmaq engagement programs and MEKS aspects.

Technical\Field Experience (select)

Public Works and Government Services Canada | Defense Construction Canada | Nova Scotia Transportation and Infrastructure Renewal | 2005 - 2021

Client services manager for several large Standing Offer Agreements (SOA) for federal and provincial agencies for broad range of services including environmental assessments, site assessments, remedial programs, auditing, dredging programs, groundwater and surface water monitoring, building materials surveys and other projects to support operations at the client's facilities. Total annual values of contracts are in the $1.5 M CDN range and represent roughly 100 projects per year. Peter was the assigned CSM for the following SOAs:

- Defence Construction Canada (DCC) Standing Offer Agreements for Contaminated Site Assessment at Department of National Defence (DND) – Maritime Forces Atlantic (MARLANT) sites in Nova Scotia. (2010 - 2013)
- Nova Scotia PWGSC RISO for Environmental Services involving over 500 Phased ESAs (2006 - present)
- Client Services Manager, Additional Phase I and II Site Assessment and Preliminary Quantitative Risk Assessment, CFB Halifax, 12 Wing Shearwater Running Track, MARLANT (2010 - 2011)
- Client Services Manager, Additional Site Assessment, Site Characterization and Remedial Action Plan Development, Future Transport, Electrical and Mechanical Engineering (TEME) Complex, CFB Halifax, Willow Park, MARLANT (2010 - 2011)
- Client Services Manager, Post-Remediation Groundwater Monitoring, Former Petroleum Storage and Handling Area, McNab's Island, NS.

This project was completed for Public Works and Government Services Canada (PWGSC) on behalf of Parks Canada (2010)

Project Coordinator/Field Supervisor Over 700 environmental projects throughout Nova Scotia, New Brunswick, Newfoundland & Labrador, and Prince Edward Island | At First Nations communities, federally owned facilities, petroleum bulk plant facilities, petroleum retail outlets, maintenance garages, marine wharf facilities, and lighthouses (both remote and land based)

The projects completed at these sites included historical reviews, Phased ESAs, development and costing of remedial alternatives, implementation of remediation programs, transport and fate of contaminant studies, emergency spill response, human health and ecological risk assessments (quantitative and qualitative), environmental/closure audits and geophysical survey design and implementation. Typical project responsibilities included historical reviews, soil, sediment, groundwater, surface water and air sampling (using a wide variety of sampling methods including test pits, boreholes, monitor wells and soil vapour wells), site interviews, historical land use review, regulatory reviews, site infrastructure inspection, on site supervision during remediation and removal of petroleum storage tank/equipment removal, site decommissioning, plume delineation, compaction testing, data compilation and interpretation, and report preparation.

Appendix B -Community Engagement Letters

June 27, 2022

Chief and Council
Acadia First Nation
10526 Hwy #3
Yarmouth, NS
B5A 5J7

"***Via email- frontdesk@acadiaband.ca***"

Dear Chief and Council,

Re: Proposed Wedgeport Wind Farm Project

The purpose of this letter is to inform you on the status of the proposed Wedgeport Wind Farm Project and initiate engagement with your community on participating in the completion of a Mi'kmaq Ecological Knowledge Study Report (MEKSR) for this proposed Project.

Indigenous Environmental Solutions (IES) has been retained to complete a MEKSR for this project.

Wedgeport Wind Farm LP (Proponent) is proposing to develop a wind project at a site located in the district of Argyle, Yarmouth County, Nova Scotia (please see Figure 1- Project Location). The Wedgeport Wind Farm LP is a partnership between Sipekne'katik First Nation, Elemental Energy, and Stevens Wind and the Project involves developing 9-14 wind turbines with a total capacity of 50-80 Mw.

The Project also includes developing substations, collector lines and access roads within the study area (please see Figure 2- Study Area). Currently, the Project site consists primarily of barren (immature and mature mixed forest) and undeveloped woodlands that are a combination of private and Crown lands.

Proponent:

Wedgeport Wind Farm LP

Suite 2150 – 745 Thurlow St.

Vancouver, BC, Canada V6E 0C5

For more information, please visit:

https://elementalenergy.ca/project/wedgeport-wind/

Figure 1- Project Location

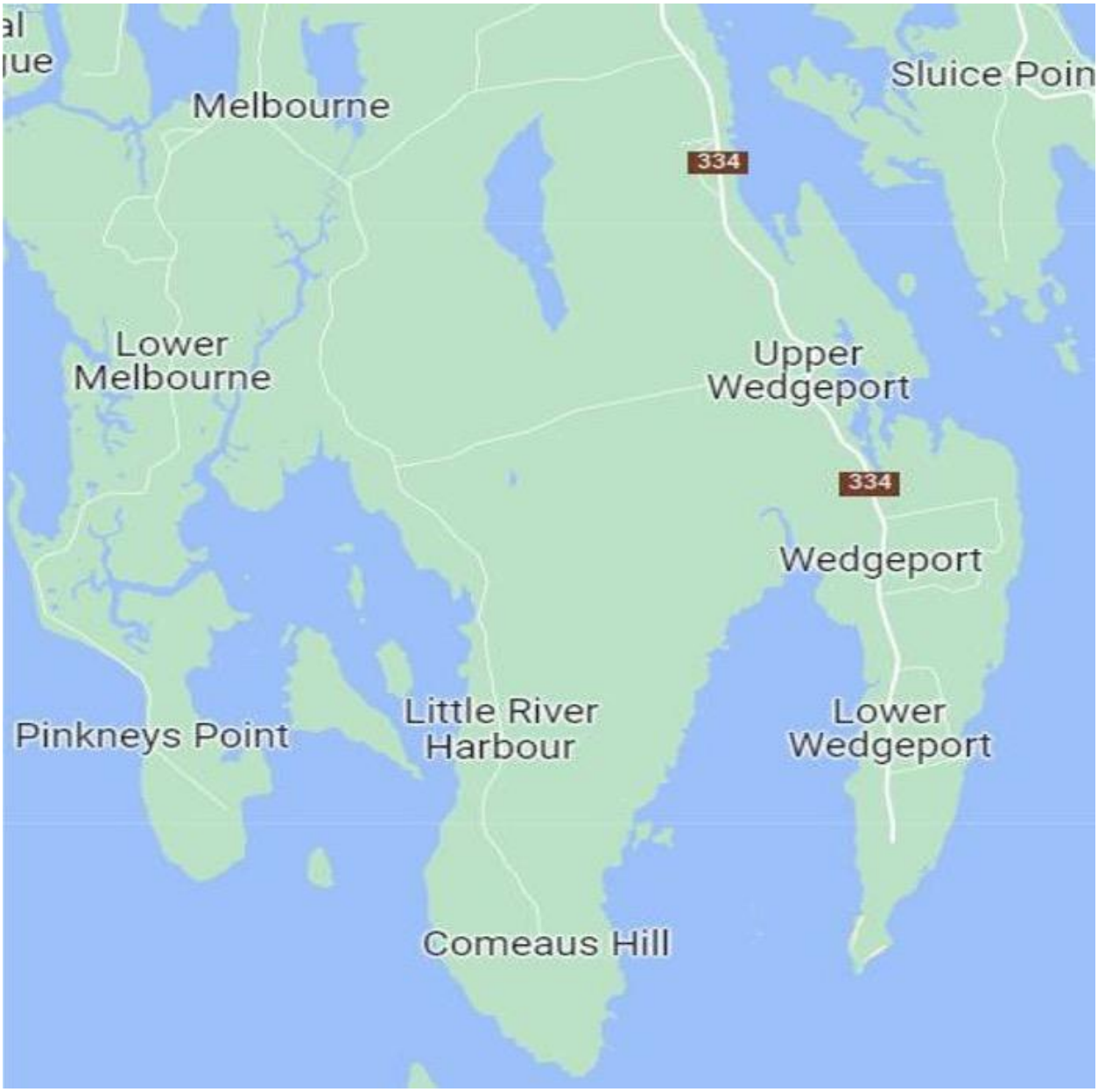
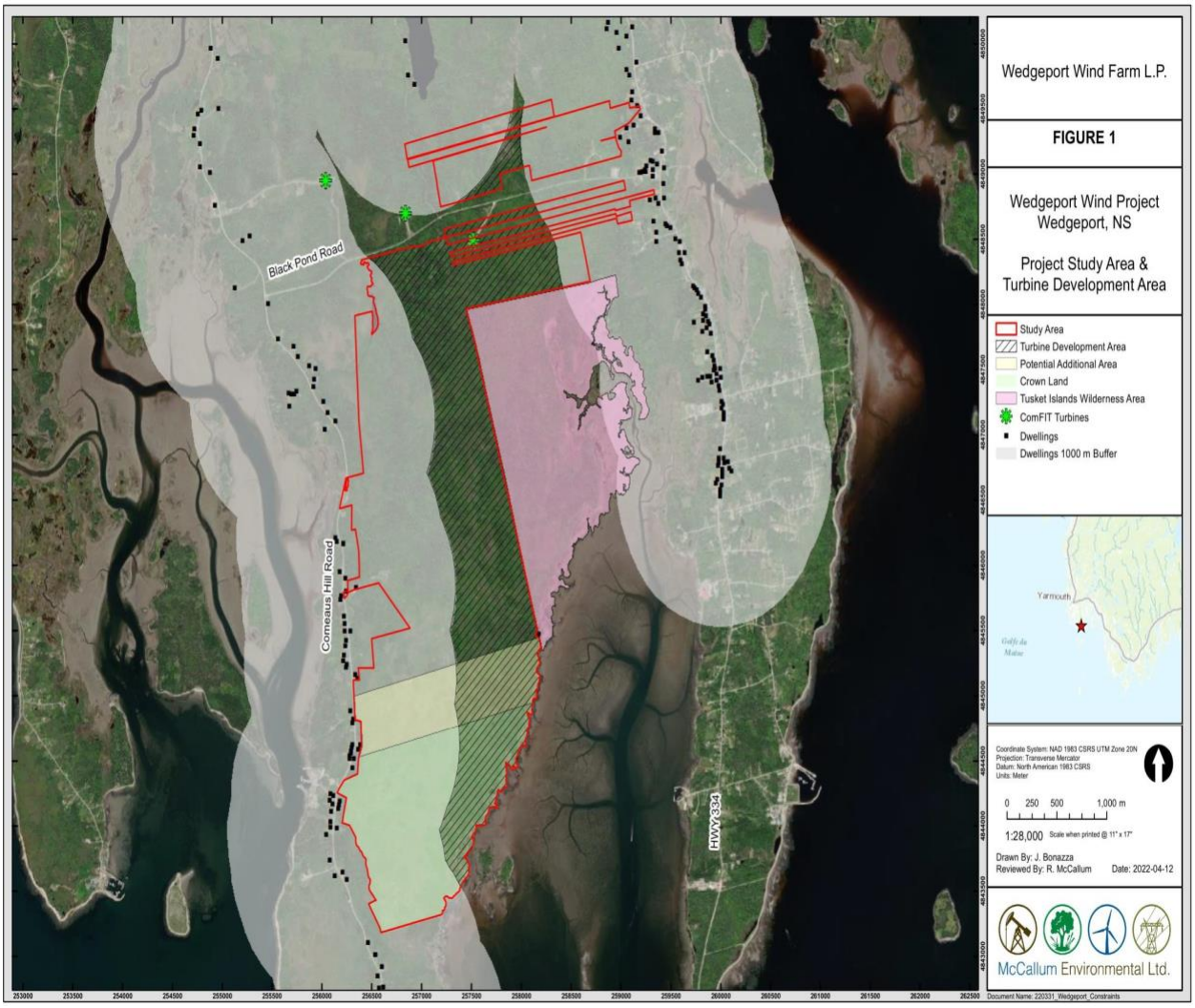


Figure 2- Study Area



Engagement Activities to Date

Initial project engagement with the Acadia First Nation occurred between January to March 2022 with both the Chief and Council and community representatives to share information on the Project and discuss potential partnership opportunities.

Since that time the Project planning has proceeded to the permitting stages and Indigenous Environmental Solutions (IES) has been retained to complete the MEKSR.

Previous Site Work

Previous work includes a completed Environmental Assessment in 2012 for a similar wind project in the study area. Included in this work was the completion of a Mi'kmaq Ecological Knowledge Study by Membertou Geomatics Solutions and archeological assessment work. According to that environmental assessment:

> "…Mi'kmaq traditional uses both past and present do not occur within the study area as defined for the ea (thus corroborating the assessment of low archaeological potential in the study area)." Stantec, 2012.

MEKSR Methods

IES is proposing to complete the following methods:

> **Step 1 Initiation:** Each Chief and Council will be contacted to introduce the Project and seek direction on who should participate in the discussions (at the same time, the Kwilmu'kw Maw-klusuaqn Negotiation Office will be copied to fulfill the expression of interest requirement of the MEKSP for Assembly of Nova Scotia Mi'kmaq Chiefs member communities).
>
> The goal of Step 1 is to understand who is interested in dialogue on the potential impacts the proposed Project could have on the environment. Once IES understands interested Participants, each Participant will be asked about dialogue requirements (how, where, when, participant requirements and other details).
>
> **Step 2 Workplan:** Once interest is understood and community requirements are known, a workplan will be developed to organize and plan for the engagement. IES will work with each Participant to plan the dialogue.
>
> **Step 3 Interviews:** IES will complete interviews as required by the Chief and Council and Participants identified by the community.
>
> Generally, the approach IES will use to complete the interviews is to deliver the Project information to each Participant and then discuss the matter over the phone or through online services (due to Covid-19). IES will not be collecting confidential information- views and ideas will be discussed about the possible environmental effects the Project could have on the environment and summaries of dialogue will be prepared by IES.
>
> However, if there is one or more knowledge holders with confidential information identified through this process, IES will engage each respective Chief and Council for direction on how the information needs to be protected, details on ownership of the information, storage of the information and other intellectual property rights details that are required for the consent process.

Step 4 Site Visits: Will be completed by IES in collaboration with interested Participants. Information on the biophysical environment will be discussed during the interview process, including baseline flora and fauna surveys to identify species of concern.

Step 5 Historical Research: Historical information for the Project area will be identified and made available to each Participant. In addition to this, IES will complete research of historical information that focuses on the Project area and how the Project could impact the environment.

Once you have had an opportunity to review this information, IES kindly requests the following information:

1. Are you or someone you know interested in participating in this dialogue? If so, IES seeks to understand who from the community should be included in the discussions.
2. Should IES be including any supporting organizations for these discussions? IES intends to write to all relevant organizations but want to be sure this is appropriate for each participating community. Specifically, should IES write to the other offices located on other Acadia First Nation Reserves?
3. If there are members of the community that will participate and deemed credible by the community, how should IES engage with them for this dialogue? Given the current Covid-19 climate, IES seeks to engage participants on the phone or through online services. However, in-person discussions or site visits can be included if deemed helpful.
4. IES intends to focus on the proposed project and the potential environmental effects the Project could have on the environment. Therefore, IES does not seek any confidential or personal information from participants. If there is a need to collect confidential information IES will seek direction on the intellectual property rights issues detailed above with you prior to proceeding.

Thank-you for your attention on this matter. In closing, once IES understands who is participating and how, IES will take the next steps to contact Participants and associated organizations to discuss the proposed project in more detail.

If you have any questions or concerns, please feel free to contact me at michaelc@I-E-S.ca or (902) 890-8549.

Kind Regards,

Michael Cox

Principal, IES

c. Kwilmu'kw Maw-klusuaqn Negotiation Office (info@mikmaqrights.com)

June 27, 2022

Chief and Council
Glooscap First Nation
150 Smith Road
Hantsport, NS
B0P 1P0

"***Via email- admin@glooscapfirstnation.com***"

Dear Chief and Council,

Re: Proposed Wedgeport Wind Farm Project

The purpose of this letter is to inform you on the status of the proposed Wedgeport Wind Farm Project and initiate engagement with your community on participating in the completion of a Mi'kmaq Ecological Knowledge Study Report (MEKSR) for this proposed Project.

Indigenous Environmental Solutions (IES) has been retained to complete a MEKSR for this project.

Wedgeport Wind Farm LP (Proponent) is proposing to develop a wind project at a site located in the district of Argyle, Yarmouth County, Nova Scotia (please see Figure 1- Project Location). The Wedgeport Wind Farm LP is a partnership between Sipekne'katik First Nation, Elemental Energy, and Stevens Wind and the Project involves developing 9-14 wind turbines with a total capacity of 50-80 Mw.

The Project also includes developing substations, collector lines and access roads within the study area (please see Figure 2- Study Area). Currently, the Project site consists primarily of barren (immature and mature mixed forest) and undeveloped woodlands that are a combination of private and Crown lands.

Proponent:

Wedgeport Wind Farm LP

Suite 2150 – 745 Thurlow St.

Vancouver, BC, Canada V6E 0C5

For more information, please visit:

https://elementalenergy.ca/project/wedgeport-wind/

Figure 1- Project Location

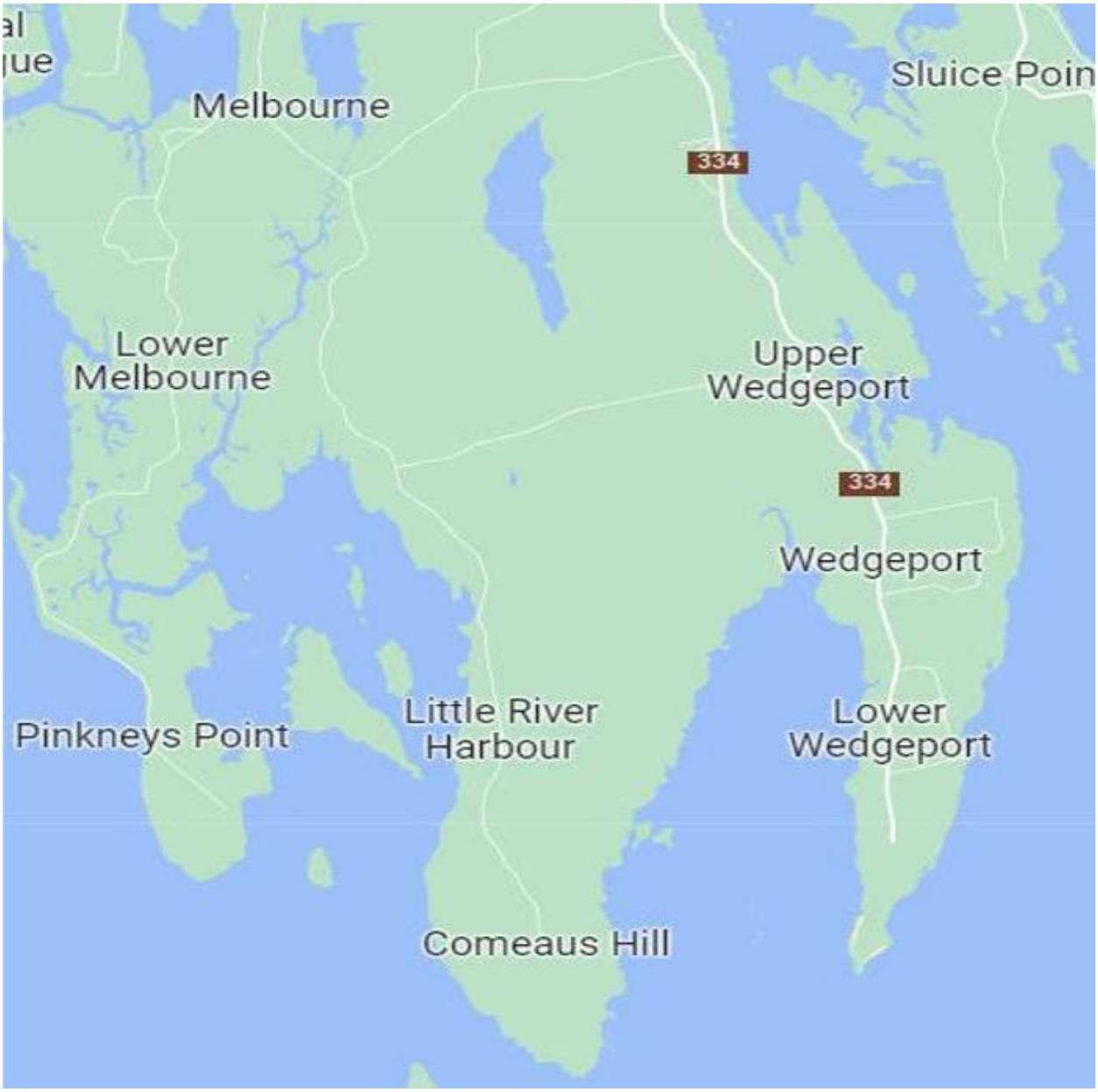
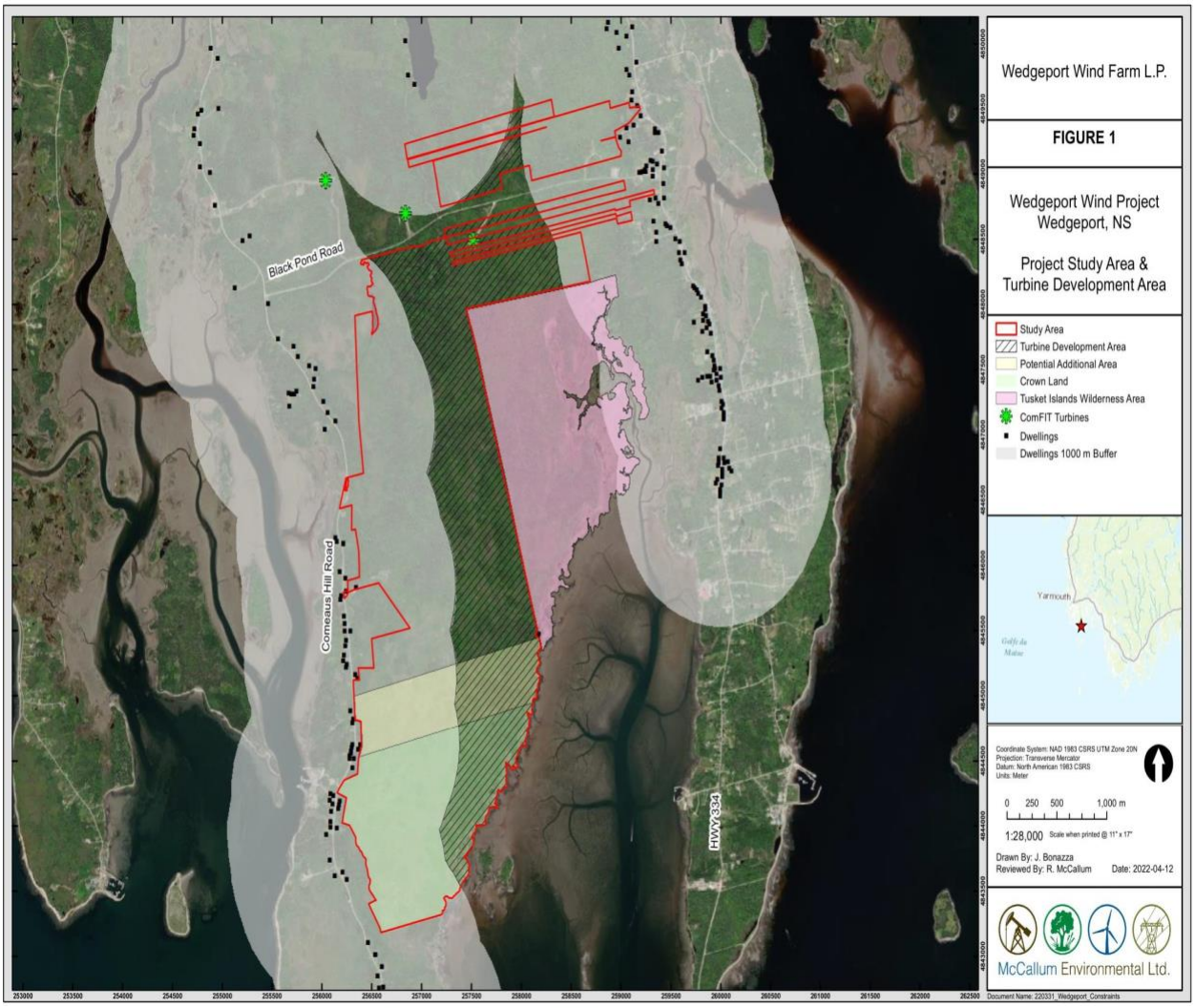


Figure 2- Study Area



Engagement Activities to Date

Initial project engagement with the Glooscap First Nation occurred between January to March 2022 consisting of multiple project information and partnership discussions with Glooscap Energy Limited Partnership representatives.

Since that time the Project planning has proceeded to the permitting stages and Indigenous Environmental Solutions (IES) has been retained to complete the MEKSR.

Previous Site Work

Previous work includes a completed Environmental Assessment in 2012 for a similar wind project in the study area. Included in this work was the completion of a Mi'kmaq Ecological Knowledge Study by Membertou Geomatics Solutions and archeological assessment work. According to that environmental assessment:

> "…Mi'kmaq traditional uses both past and present do not occur within the study area as defined for the ea (thus corroborating the assessment of low archaeological potential in the study area)." Stantec, 2012.

MEKSR Methods

IES is proposing to complete the following methods:

> **Step 1 Initiation:** Each Chief and Council will be contacted to introduce the Project and seek direction on who should participate in the discussions (at the same time, the Kwilmu'kw Maw-klusuaqn Negotiation Office will be copied to fulfill the expression of interest requirement of the MEKSP for Assembly of Nova Scotia Mi'kmaq Chiefs member communities).
>
> The goal of Step 1 is to understand who is interested in dialogue on the potential impacts the proposed Project could have on the environment. Once IES understands interested Participants, each Participant will be asked about dialogue requirements (how, where, when, participant requirements and other details).
>
> **Step 2 Workplan:** Once interest is understood and community requirements are known, a workplan will be developed to organize and plan for the engagement. IES will work with each Participant to plan the dialogue.
>
> **Step 3 Interviews:** IES will complete interviews as required by the Chief and Council and Participants identified by the community.
>
> Generally, the approach IES will use to complete the interviews is to deliver the Project information to each Participant and then discuss the matter over the phone or through online services (due to Covid-19). IES will not be collecting confidential information- views and ideas will be discussed about the possible environmental effects the Project could have on the environment and summaries of dialogue will be prepared by IES.
>
> However, if there is one or more knowledge holders with confidential information identified through this process, IES will engage each respective Chief and Council for direction on how the information needs to be protected, details on ownership of the information, storage of the information and other intellectual property rights details that are required for the consent process.

Step 4 Site Visits: Will be completed by IES in collaboration with interested Participants. Information on the biophysical environment will be discussed during the interview process, including baseline flora and fauna surveys to identify species of concern.

Step 5 Historical Research: Historical information for the Project area will be identified and made available to each Participant. In addition to this, IES will complete research of historical information that focuses on the Project area and how the Project could impact the environment.

Once you have had an opportunity to review this information, IES kindly requests the following information:

1. Are you or someone you know interested in participating in this dialogue? If so, IES seeks to understand who from the community should be included in the discussions.
2. Should IES be including any supporting organizations for these discussions? IES intends to write to all relevant organizations but want to be sure this is appropriate for each participating community.
3. If there are members of the community that will participate and deemed credible by the community, how should IES engage with them for this dialogue? Given the current Covid-19 climate, IES seeks to engage participants on the phone or through online services. However, in-person discussions or site visits can be included if deemed helpful.
4. IES intends to focus on the proposed project and the potential environmental effects the Project could have on the environment. Therefore, IES does not seek any confidential or personal information from participants. If there is a need to collect confidential information IES will seek direction on the intellectual property rights issues detailed above with you prior to proceeding.

Thank-you for your attention on this matter. In closing, once IES understands who is participating and how, IES will take the next steps to contact Participants and associated organizations to discuss the proposed project in more detail.

If you have any questions or concerns, please feel free to contact me at michaelc@I-E-S.ca or (902) 890-8549.

Kind Regards,

Michael Cox

Principal, IES

c. Kwilmu'kw Maw-klusuaqn Negotiation Office (info@mikmaqrights.com)

June 27, 2022

Chief and Council
Sipekne'katik First Nation
522 Church Street
Indian Brook, NS
B0N 2H0

"***Via email- info@sipeknekatik.ca***"

Dear Chief and Council,

Re: Proposed Wedgeport Wind Farm Project

The purpose of this letter is to inform you on the status of the proposed Wedgeport Wind Farm Project and initiate engagement with your community on participating in the completion of a Mi'kmaq Ecological Knowledge Study Report (MEKSR) for this proposed Project.

Indigenous Environmental Solutions (IES) has been retained to complete a MEKSR for this project.

Wedgeport Wind Farm LP (Proponent) is proposing to develop a wind project at a site located in the district of Argyle, Yarmouth County, Nova Scotia (please see Figure 1- Project Location). The Wedgeport Wind Farm LP is a partnership between Sipekne'katik First Nation, Elemental Energy, and Stevens Wind and the Project involves developing 9-14 wind turbines with a total capacity of 50-80 Mw.

The Project also includes developing substations, collector lines and access roads within the study area (please see Figure 2- Study Area). Currently, the Project site consists primarily of barren (immature and mature mixed forest) and undeveloped woodlands that are a combination of private and Crown lands.

Proponent:

Wedgeport Wind Farm LP

Suite 2150 – 745 Thurlow St.

Vancouver, BC, Canada V6E 0C5

For more information, please visit:

https://elementalenergy.ca/project/wedgeport-wind/

Figure 1- Project Location

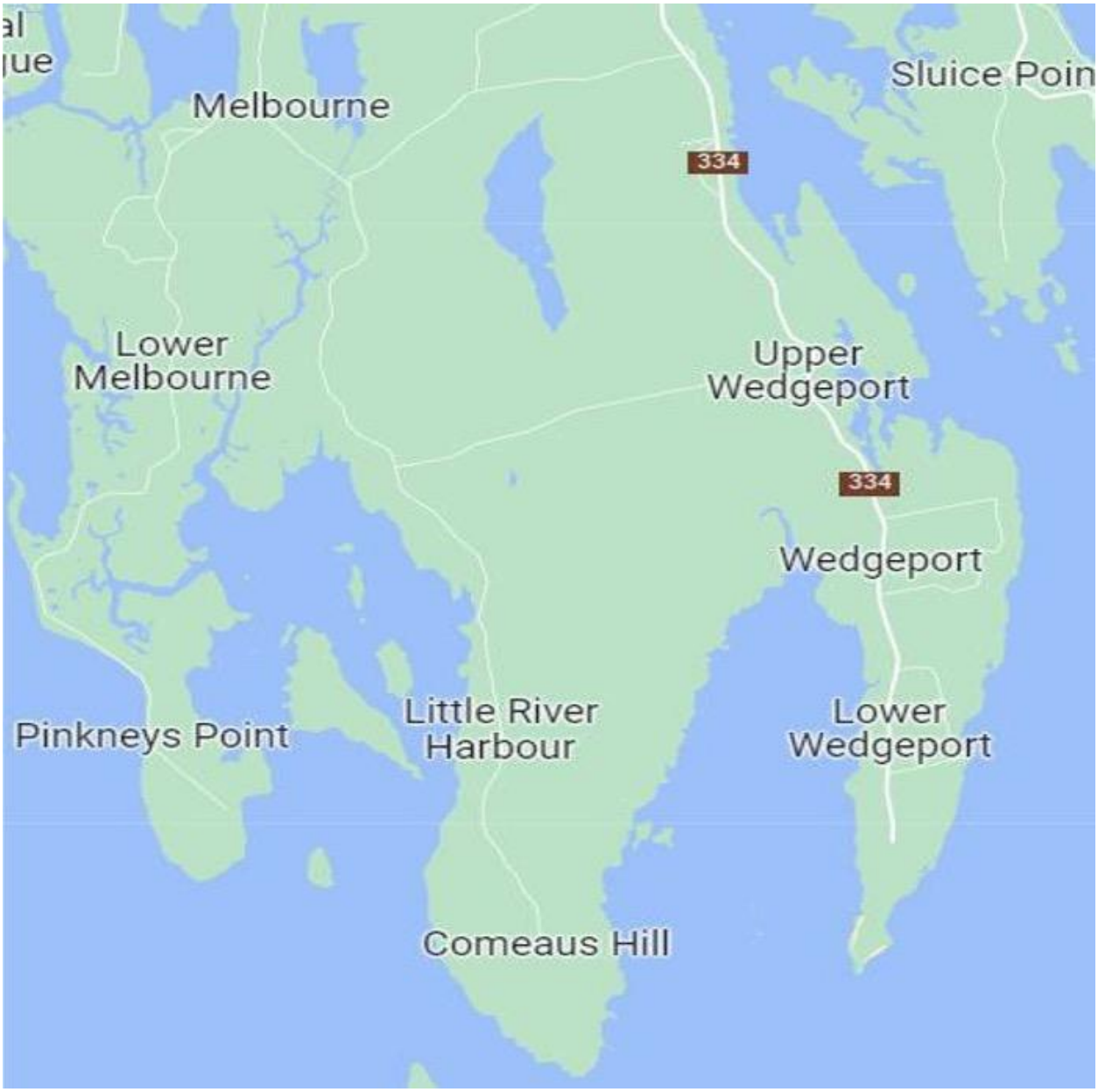
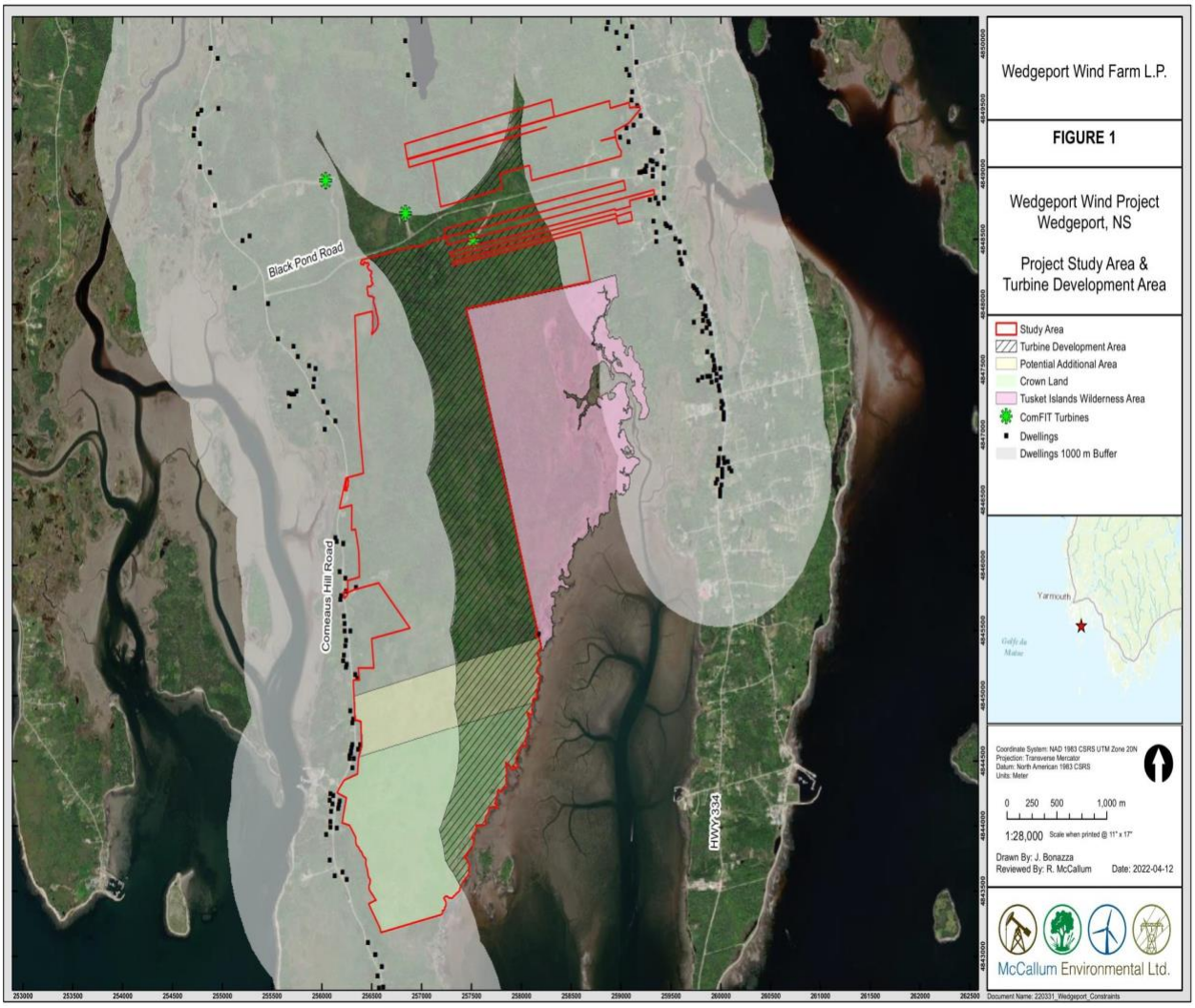


Figure 2- Study Area



Engagement Activities to Date

Initial project engagement with the Sipekne'katik First Nation occurred between January to April 2022 that consisted of multiple partnership and project information discussions with the Director of Operations and the Economic Development Officer. Sipekne'katik has been a project partner since May 2022.

Since that time the Project planning has proceeded to the permitting stages and Indigenous Environmental Solutions (IES) has been retained to complete the MEKSR.

Previous Site Work

Previous work includes a completed Environmental Assessment in 2012 for a similar wind project in the study area. Included in this work was the completion of a Mi'kmaq Ecological Knowledge Study by Membertou Geomatics Solutions and archeological assessment work. According to that environmental assessment:

> "…Mi'kmaq traditional uses both past and present do not occur within the study area as defined for the ea (thus corroborating the assessment of low archaeological potential in the study area)." Stantec, 2012.

MEKSR Methods

IES is proposing to complete the following methods:

Step 1 Initiation: Each Chief and Council be contacted to introduce the Project and seek direction on who should participate in the discussions.

The goal of Step 1 is to understand who is interested in dialogue on the potential impacts the proposed Project could have on the environment. Once IES understands interested Participants, each Participant will be asked about dialogue requirements (how, where, when, participant requirements and other details).

Step 2 Workplan: Once interest is understood and community requirements are known, a workplan will be developed to organize and plan for the engagement. IES will work with each Participant to plan the dialogue.

Step 3 Interviews: IES will complete interviews as required by the Chief and Council and Participants identified by the community.

Generally, the approach IES will use to complete the interviews is to deliver the Project information to each Participant and then discuss the matter over the phone or through online services (due to Covid-19). IES will not be collecting confidential information- views and ideas will be discussed about the possible environmental effects the Project could have on the environment and summaries of dialogue will be prepared by IES.

However, if there is one or more knowledge holders with confidential information identified through this process, IES will engage each respective Chief and Council for direction on how the information needs to be protected, details on ownership of the information, storage of the information and other intellectual property rights details that are required for the consent process.

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Thank-you for your attention on this matter. In closing, once IES understands who is participating and how, IES will take the next steps to contact Participants and associated organizations to discuss the proposed project in more detail.

If you have any questions or concerns, please feel free to contact me at michaelc@I-E-S.ca or (902) 890-8549.

Kind Regards,

Michael Cox

Principal, IES

Appendix C - Organizational Engagement

July 4, 2022

Wedgeport Wind Farm Project Fact Sheet

Wedgeport Wind Farm LP (Proponent) is proposing to develop a wind project at a site located in the district of Argyle, Yarmouth County, Nova Scotia (please see Figure 1- Project Location). The Wedgeport Wind Farm LP is a partnership between Sipekne'katik First Nation, Elemental Energy, and Stevens Wind and the Project involves developing 9-14 wind turbines with a total capacity of 50-80 Mw.

The Project also includes developing substations, collector lines and access roads within the study area (please see Figure 2- Study Area). Currently, the Project site consists primarily of barren (immature and mature mixed forest) and undeveloped woodlands that are a combination of private and Crown lands.

Indigenous Environmental Solutions (IES) has been retained to complete a MEKSR for this project.

Proponent:

Wedgeport Wind Farm LP

Suite 2150 – 745 Thurlow St.

Vancouver, BC, Canada V6E 0C5

For more information, please visit:

https://elementalenergy.ca/project/wedgeport-wind/

Figure 1- Project Location

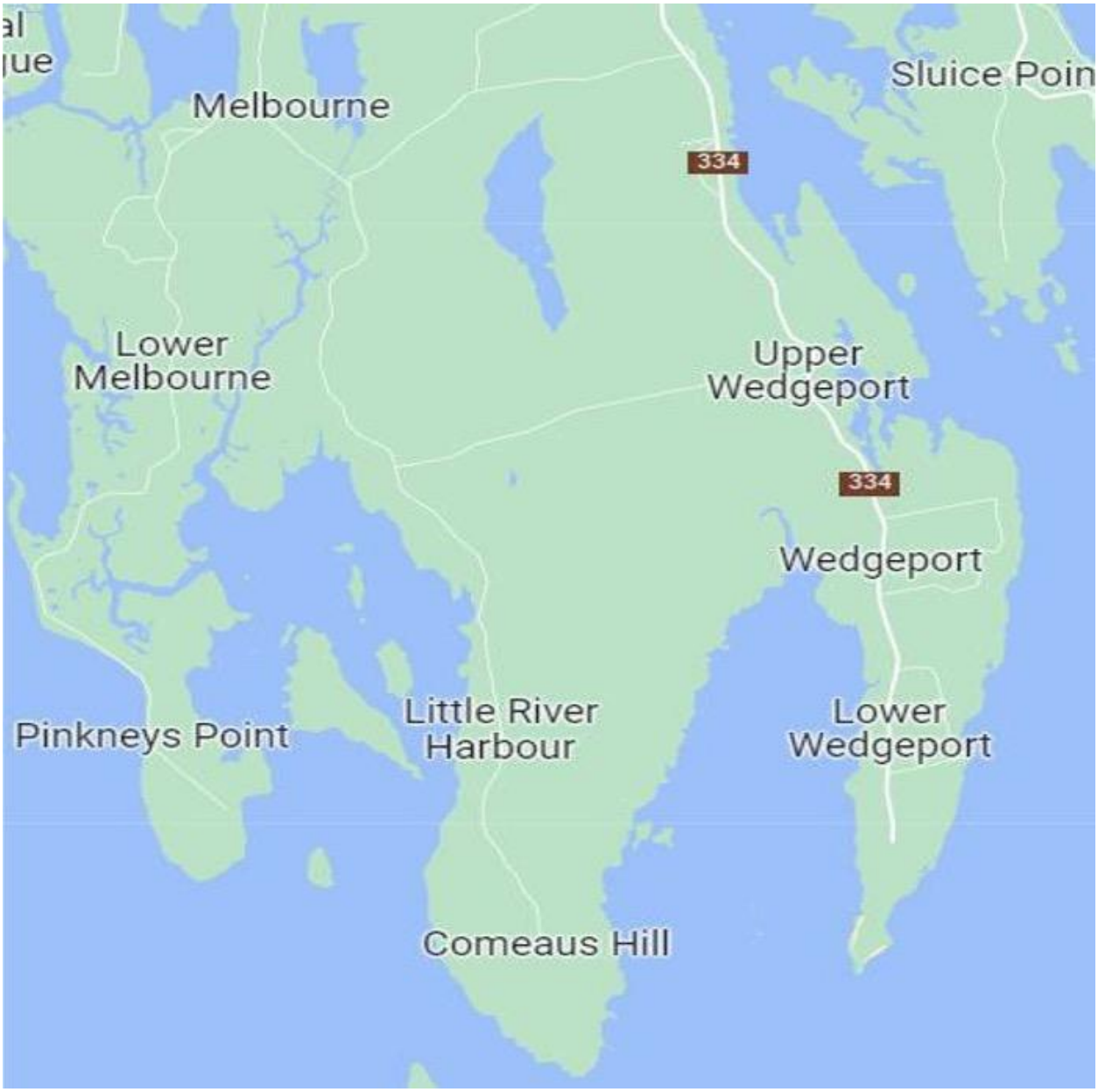
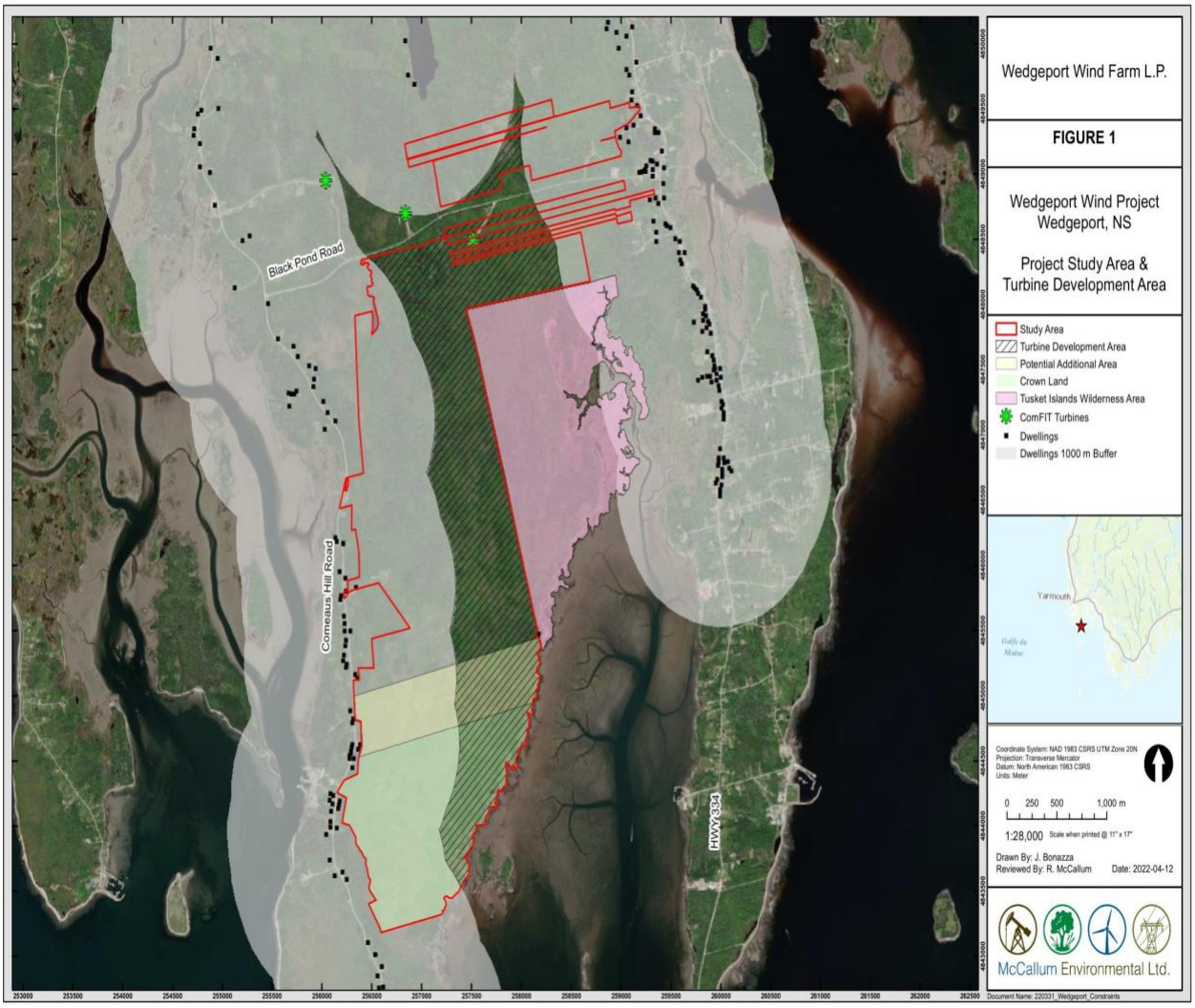


Figure 2- Study Area



Previous Site Work

Previous work includes a completed Environmental Assessment in 2012 for a similar wind project in the study area. Included in this work was the completion of a Mi'kmaq Ecological Knowledge Study by Membertou Geomatics Solutions and archeological assessment work. According to that environmental assessment:

> "…Mi'kmaq traditional uses both past and present do not occur within the study area as defined for the ea (thus corroborating the assessment of low archaeological potential in the study area)." Stantec, 2012.

Once you have had an opportunity to review this information, IES kindly requests the following information:

1. Are you or someone you know interested in participating in this dialogue? If so, IES seeks contact details for a deeper dialogue on this matter (names, phone numbers, emails etc.).
2. Does your organization have information for the Project Area? If so, is it possible to share this information?

MEKSR Contact: Michael Cox, Principal IES

michaelc@I-E-S.ca

(902) 890-8549.

Appendix D- Flora Fauna Survey

Species Observed

Sheep Laurel (*Kalmia Angustifolia*)

Bunchberry dogwood (*Cornus canadensis*)

Common Hazel (*Corylus avellana*)

Red Maple (*Acer rubrum*)

American beech (*Fagus grandifolia*)

Juneberry (*Amelanchier canadensis*)

Red spruce (*Picea rubens*)

Pennsylvania blackberry (*Rubus pensiluanicus*)

Twin flower (*Linnaea borealis*)

White clover (*Trifolium repens*)

Balsam fir (*Abies balsamea*)

Larch (*Larix decidua*)

Mountain Ash (*Sorbus aucuparia*)

Lowbush blueberry (*Vaccinium angustifolium*)

Red chockberry (*Aronia arbutifolia*)

Black chokeberry (*Aronia melanocarpa*)

Eastern haysented fern (*Dennstaedtia punctilobula*)

APPENDIX G. CONSULTATION NOTICE AND PUBLIC INFORMATION SESSION INVITATION

CONTACT US

We are open to discussing the Project, answering any questions, and receiving feedback from the community. Please feel free to reach out to us.

Maryam Baksh
development@elementalenergy.ca
+1 604 558 8005
elementalenergy.ca/projects/

WEDGEPORT WIND FARM PROJECT

PROJECT INFORMATION

50 – 80 MW wind facility (approximately 9 – 14 wind turbines)

Municipality of the District of Argyle, Nova Scotia

The Project will connect to Nova Scotia Power's transmission system to provide power to Nova Scotians.

The Project is being developed by Wedgeport Wind Farm Limited Partnership, a partnership between Elemental Energy and Stevens Wind.

Benefits: Clean, low-cost, and reliable power for Nova Scotians with community and economic benefits and employment opportunities.

NOVA SCOTIA RATE BASE PROCUREMENT

In May 2022, Wedgeport Wind Farm LP is submitting a bid in response to the Nova Scotia Rate Base Procurement (RBP) RFP. If selected, Wedgeport Wind Farm LP will enter into a 25-year Power Purchase Agreement with Nova Scotia Power Inc. (NSPI) to provide renewable electricity for the Province of Nova Scotia.

For more information, visit: novascotiarbp.com/public-faq

MI'KMAQ ENGAGEMENT

Wedgeport Wind Farm LP is committed to working with the Mi'kmaq of Nova Scotia in the spirit of friendship and reconciliation.

ENVIRONMENTAL ASSESSMENT

Before construction, the Project must successfully complete a provincial Environmental Assessment (EA).

The EA will include baseline environmental studies, summaries of public engagement, feedback, and other required studies.

Ultimately, the Minister of Environment makes a final decision regarding the Project.

Public consultation is an integral part of the EA process, and the community is invited to comment on the EA during the review period.

WEDGEPORT WIND FARM PROJECT

EARLY 2022

- Project notification & preliminary public consultation
- Bid Project into RBP RFP Program
- Environmental field work

LATE 2022

- Execute Power Purchase Agreement
- Submit EA and development permit application
- Ongoing public engagement

MID 2023

- Construction begins
- Ongoing public engagement

LATE 2024

- Commercial operations
- Ongoing public engagement

PROJECT BENEFITS

- GHG EMISSION REDUCTIONS
- INCREASED PROPERTY TAX REVENUE TO THE LOCAL MUNICIPALITY FOR LOCAL INITIATIVES
- COMMUNITY BENEFIT FUND
- LOCAL STIMULUS
- LOCAL CONTRACTING OPPORTUNITIES

DEVELOPMENT ACTIVITIES ACHIEVED

Land: Discussions with landowners and leases secured.

Environment: Environmental field work completed in 2012 with updates to be made in 2022.

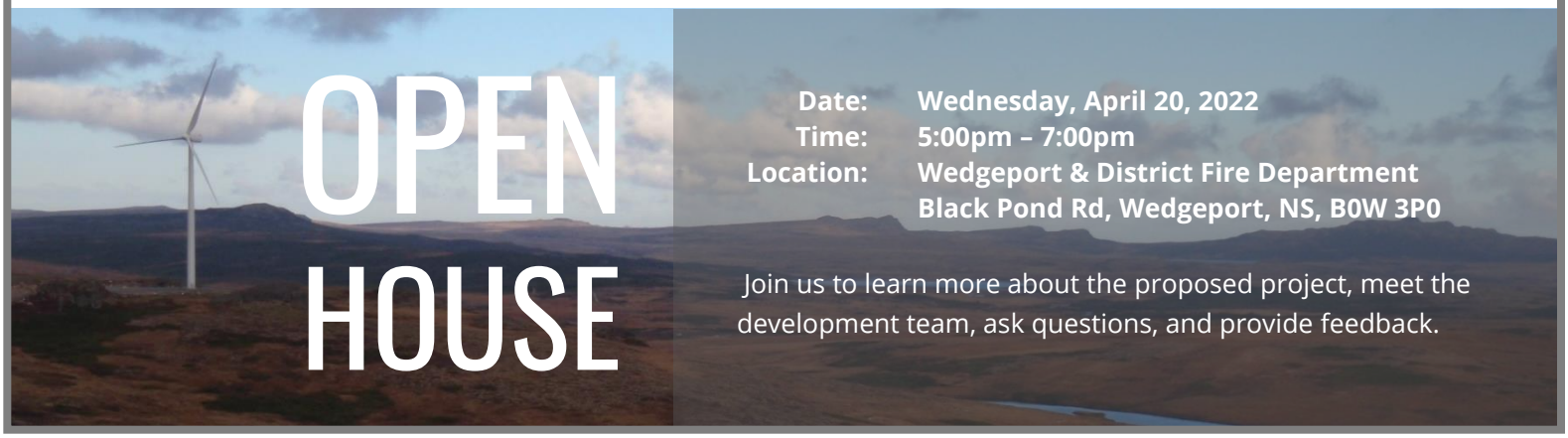
Wind resource measurements: Wind data collected at the Project site since 2011.

Interconnection: Feasibility study underway with NSPI.

ABOUT US

Wedgeport Wind Farm LP is a partnership between Elemental Energy and Stevens Wind. The Partners are Canadian wind energy developers with experience developing, constructing, and operating wind and solar energy projects in Atlantic Canada and across North America for the past 20 years.

This partnership brings diverse expertise, extensive knowledge of Canadian renewable energy markets, and local ownership and representation.



OPEN HOUSE

Date: Wednesday, April 20, 2022
Time: 5:00pm – 7:00pm
Location: Wedgeport & District Fire Department
Black Pond Rd, Wedgeport, NS, B0W 3P0

Join us to learn more about the proposed project, meet the development team, ask questions, and provide feedback.

APPENDIX H. PUBLIC INFORMATION SESSION TAKE-HOME HANDOUT

WEDGEPORT WIND FARM PROJECT

Email: development@elementalenergy.ca
Phone: 604-558-8005
Website: elementalenergy.ca

PROJECT OVERVIEW

The proposed Wedgeport Wind Farm Project is a 50 – 80 MW (approximately 9 – 14) wind power project in Wedgeport, NS. The Project is being developed by Wedgeport Wind Farm LP, a partnership between Elemental Energy and Stevens Wind. The partnership has extensive experience developing, financing, constructing, owning, and operating wind energy projects in Nova Scotia, the Maritimes, and across North America. We are owners and operators of 7 COMFIT projects across Nova Scotia, including the COMFIT turbine at Wedgeport, and other wind projects in the Maritimes.

The Project is strategically located on a windy peninsula near Wedgeport, with strong and proven wind resource making this site an ideal location for a wind project. The Project will connect to Nova Scotia Power's transmission line near Tusket, which has available capacity to host new generation.

COMMUNITY BENEFITS

Employment: The Project is expected to create many jobs during construction, and full-time roles are anticipated throughout operations.

Local Contracting Opportunities: Project proponents have a track record of hiring local contractors.

Tax Revenue: Property tax payments to the municipality will support municipal services, infrastructure, and local initiatives for decades to come.

Community Benefits Fund: Contribution to local initiatives via a community fund.

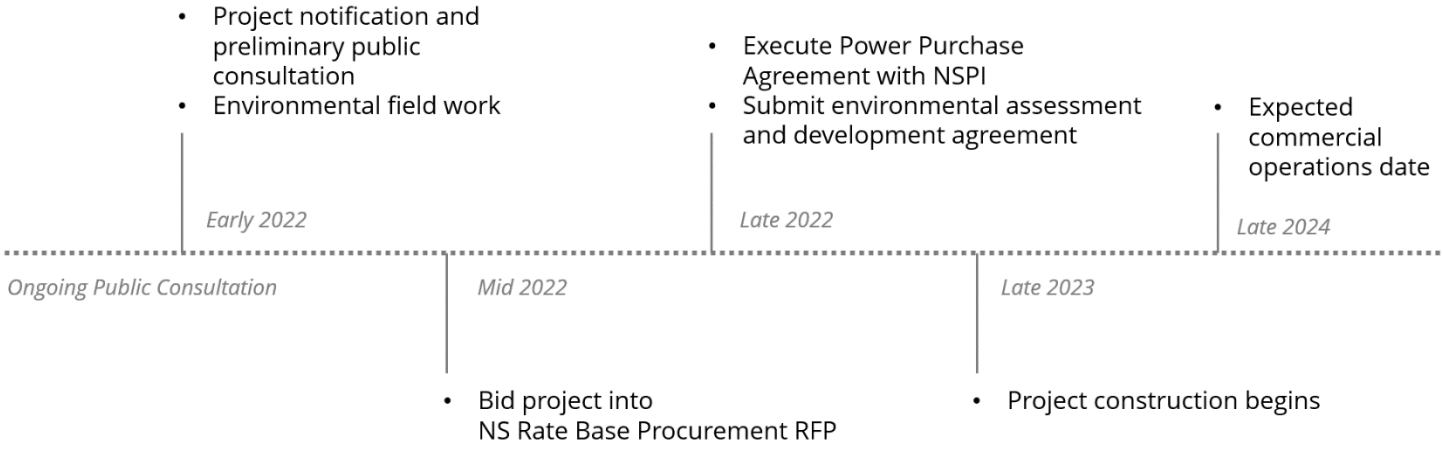
Greenhouse Gas Emissions Reductions: Offset greenhouse gas emissions from coal-fired generation in Nova Scotia.

Education: Community education and training events.

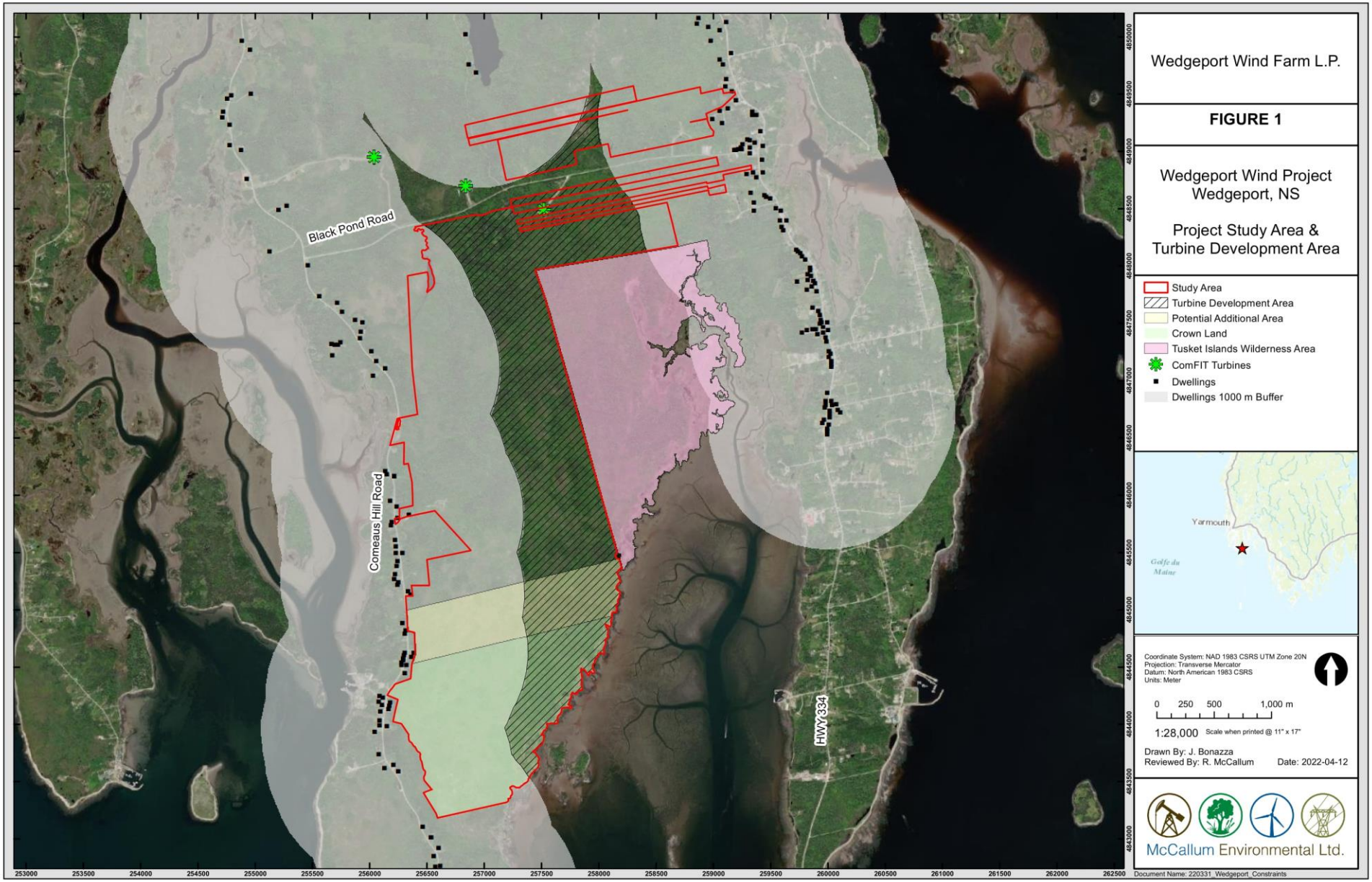
Local Stimulus: Local businesses will benefit from increased spending on goods and services during construction and operations.

Clean, low-cost power: Low-cost, reliable, and renewable electricity for Nova Scotians.

PROJECT TIMELINE



PROJECT STUDY AREA & PROPOSED WIND TURBINE DEVELOPMENT AREA



APPENDIX I. PUBLIC INFORMATION SESSION POSTER BOARDS

WEDGEPORT WIND FARM

OPEN HOUSE

WEDNESDAY, APRIL 20, 2022

5:00PM - 7:00PM

This event is subject to COVID-19 safety protocols

Welcome to our Open House

Please sign in at the registration desk then feel free to view our display boards and say hello.

Our team is here to provide information about the project, listen to your feedback, and answer your questions.

Thank you for attending!

WEDGEPORT WIND FARM

Project Overview

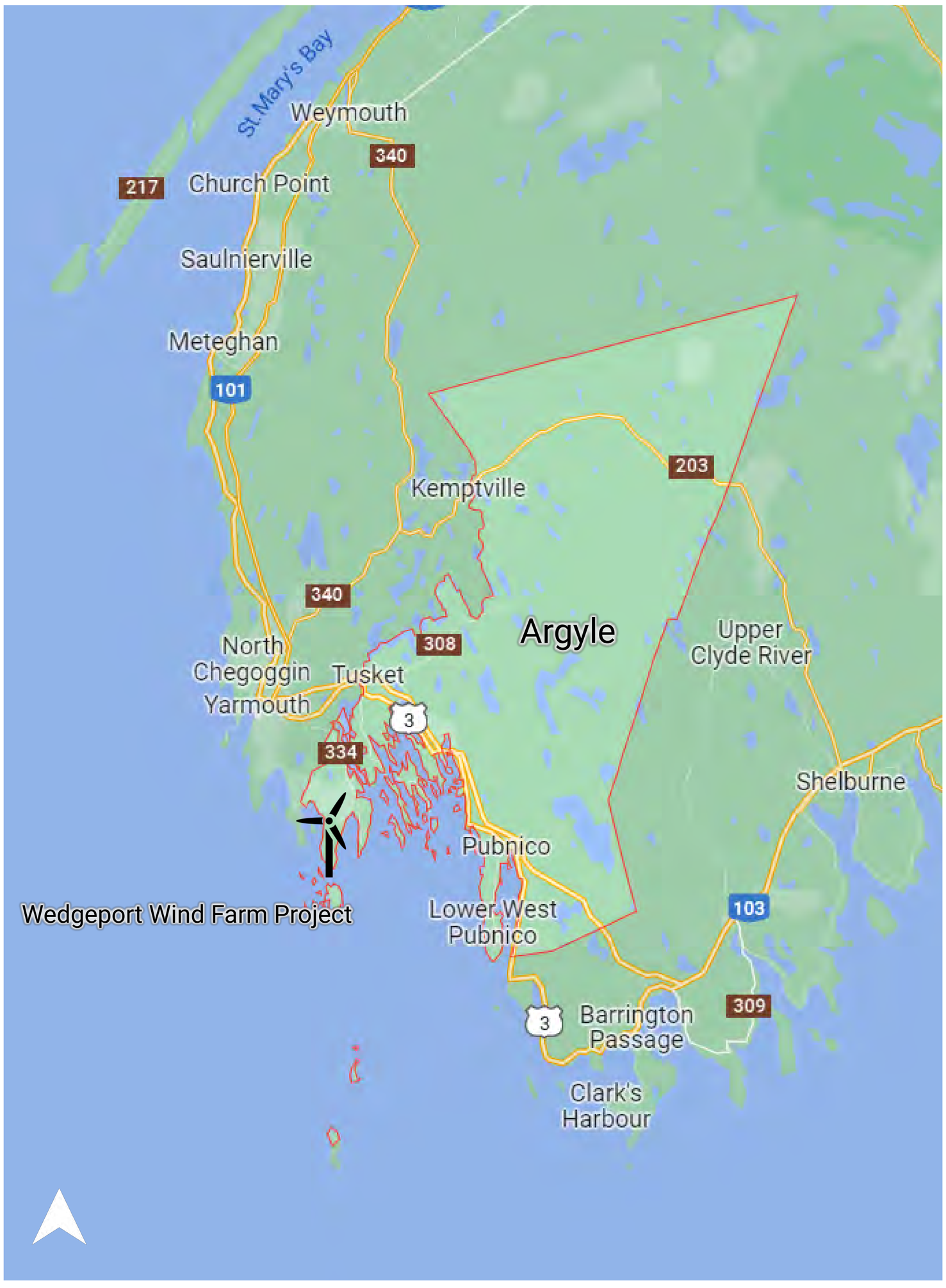
Developer: Wedgeport Wind Farm LP (Elemental Energy & Stevens Wind)

Project Name: Wedgeport Wind Farm

Municipality: Municipality of the District of Argyle

Project Type: Wind Power

Project Size: 50 — 80 MW (approximately 9—14 wind turbines)



Location:
Wedgeport, NS

Project Infrastructure:
Wind turbines, spur roads, meteorological tower, substation, and other electrical equipment.

Interconnection:
The Project will connect to Nova Scotia Power's electrical transmission line located near Tusket.

WEDGEPORT WIND FARM

Wedgeport Wind Farm LP

Wedgeport Wind Farm LP is a partnership between two experienced Canadian wind development companies: Elemental Energy and Stevens Wind.

Wedgeport Wind Farm LP combines the talents and resources of its partners to develop the Wedgeport Wind Farm Project. Each partner has extensive experience developing, financing, constructing, owning, and operating wind energy projects in Nova Scotia, the Maritimes, and across North America.

Across the partnership, we have been extensively involved in wind energy in Nova Scotia. We are owners and operators of **7 COMFIT** projects across Nova Scotia, including the COMFIT turbine at Wedgeport, and other wind projects in the Maritimes.

We have collective experience creating community energy projects and Indigenous energy projects across Canada.

Together, we possess a diversity of experience, extensive knowledge of Canadian renewable energy markets, and **local ownership and representation**.

WEDGEPORT WIND FARM

Elemental Energy

About Us: Canadian private renewable energy development company with over 200 MW of wind, solar, and hydro projects in construction/ operations, and over 1,000 MW of projects in development. This includes 74 MW of wind farms in Nova Scotia and Newfoundland. Our portfolio map is shown below.

Our Vision: We are committed to projects that generate environmental benefits for the planet, positive social impacts for the communities in which we work, and long-term financial returns. From greenfield to fully operational, we develop, fund, and acquire projects at various stages of development.

Our Team: Elemental is an entrepreneurial team of individuals with diverse backgrounds in energy, finance, and project development. The team brings a track record of executing complex transactions, building successful businesses, and developing lasting partnerships.

WEDGEPORT WIND FARM

Community Benefits

Employment: The Project is expected to create many jobs during construction, and full-time roles are anticipated throughout operations.

Local Contracting Opportunities: Construction and operations will rely on local supply chain and services, with job opportunities such as surveying, civil, electrical, and mechanical construction, and equipment transportation.

Tax Revenue: Property tax payments to the municipality will support municipal services, infrastructure, and local initiatives for decades to come.

Community Benefits Fund: Contribution to local initiatives via a community benefits fund.

Greenhouse Gas Emissions Reductions: Offset greenhouse gas emissions from coal-fired generation in Nova Scotia.

Education: Community education and training events.

Local Stimulus: Local businesses will benefit from increased spending on goods and services during construction and operations phases.

Clean, low-cost power: Low-cost, reliable, and renewable electricity for Nova Scotians.

Local Stimulus: Local businesses will benefit from increased spending on goods and services during construction and operations phases.

WEDGEPORT WIND FARM

Why Here?

Strong and proven wind resource at Wedgeport makes this site an ideal location for a wind power project.

Grid connection with available capacity to host new generation.

Private landowners interested in hosting wind turbines.

Why Now?

The Government of Nova Scotia is competitively procuring renewable energy through the **Rate Based Procurement** to source renewable energy for Nova Scotians in early 2022.

The Rate Based Procurement aims to attract low-cost and innovative solutions to procure 350 MW of renewable and low carbon electricity for the province of Nova Scotia. In addition to supporting Nova Scotia's goals to fight climate change, this procurement will encourage investment and create jobs.

The Procurement Administrator will conduct a request for proposal (RFP) process to identify the most competitive low-impact renewable energy projects. These projects will be awarded Power Purchase Agreements (PPAs) with Nova Scotia Power Inc. (NSPI) to supply renewable electricity generation for their customers.

This call for proposals will help the province get closer to the 80% target of renewable energy and support the province’s goal of achieving a 53% reduction in greenhouse gas emissions by 2030 and net-zero by 2050.

WEDGEPORT WIND FARM

What's Next?

Anticipated Project Schedule

Early 2022

- Project notification and preliminary public consultation
- Environmental field work

Mid 2022

- Bid project into Nova Scotia Rate Based Procurement RFP

Late 2022

- Execute Power Purchase Agreement
- Submit environmental assessment and development permit application

Late 2023

- Project construction begins

Late 2024

- Expected Commercial Operations Date

Public Consultation

Wedgeport Wind Farm L.P.

FIGURE 1

Wedgeport Wind Project
Wedgeport, NS

Project Study Area &
Turbine Development Area

- Study Area
- Turbine Development Area
- Potential Additional Area
- Crown Land
- Tusket Islands Wilderness Area
- ComFIT Turbines
- Dwellings
- Dwellings 1000 m Buffer

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 250 500 1,000 m

1:28,000 Scale when printed @ 11" x 17"

Drawn By: J. Bonazza
Reviewed By: R. McCallum Date: 2022-04-12

McCallum Environmental Ltd.

Document Name: 220331_Wedgeport_Constraints

WEDGEPORT WIND FARM

Environmental Assessment

An Environmental Assessment (EA) is required by Nova Scotia Environment and Climate Change (NSECC) to ensure that the Project's environmental impacts are minimal and mitigated. An EA identifies impacts early in project development and guides the proponent towards appropriate and proven risk mitigation strategies. McCallum Environmental has been retained to complete the EA work for the Project.

Public consultation is an integral part of the EA process and the community is invited to comment on the EA during the review period.

Once the proponent submits an EA application in mid 2022 to NSECC, it is reviewed for a **50 day** period, where the **first 30 days** are open to the public to provide comments on the EA to NSECC. Once the review period is over, a final decision and conditions are delivered by the Minister of Environment.

Studies Underway

The following baseline environmental studies are included as part of the Environmental Assessment:

- Avifauna (birds & bats)
- Wildlife (e.g. moose)
- Vegetation
- Wetlands
- Watercourses & aquatic habitats
- Groundwater & geology
- Noise & shadow flicker
- Visual impacts
- Archaeological & historic resources
- Socioeconomic studies

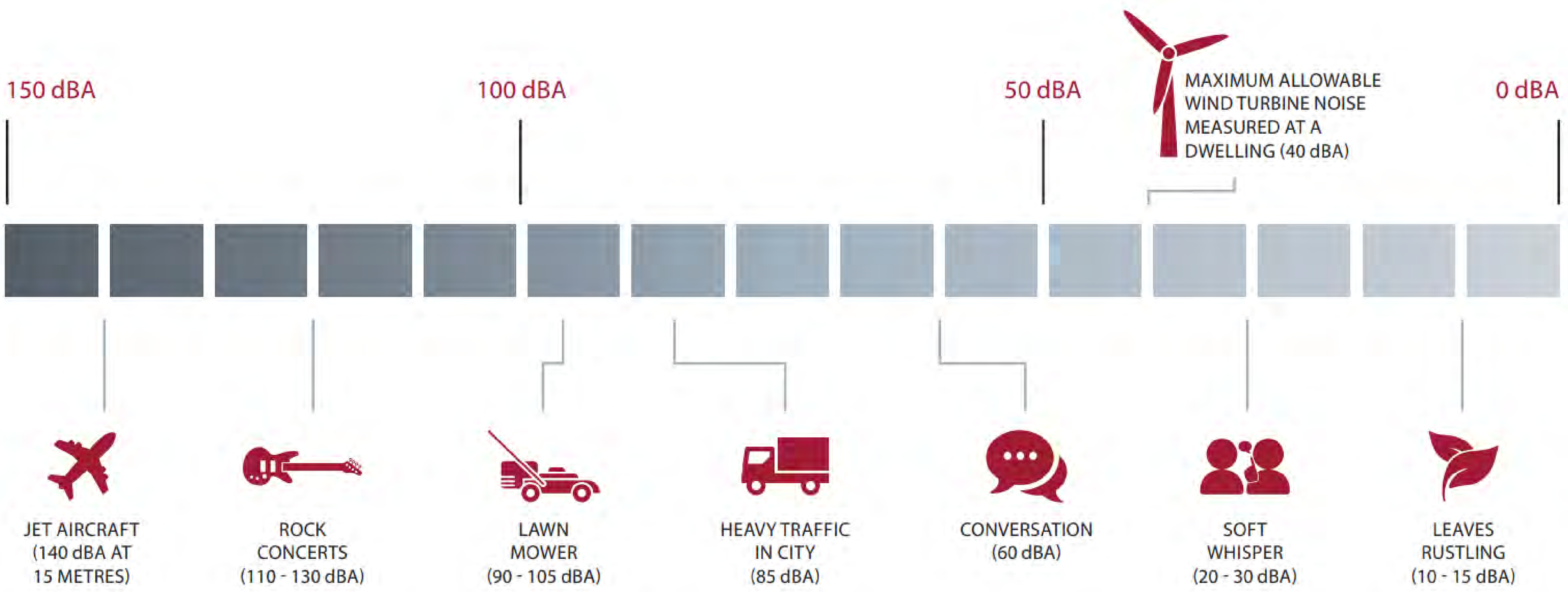
WEDGEPORT WIND FARM

Sound & Noise

Nova Scotia Environment and Climate Change requires sound levels from wind turbines to not exceed **40 dBA** outside of a home.

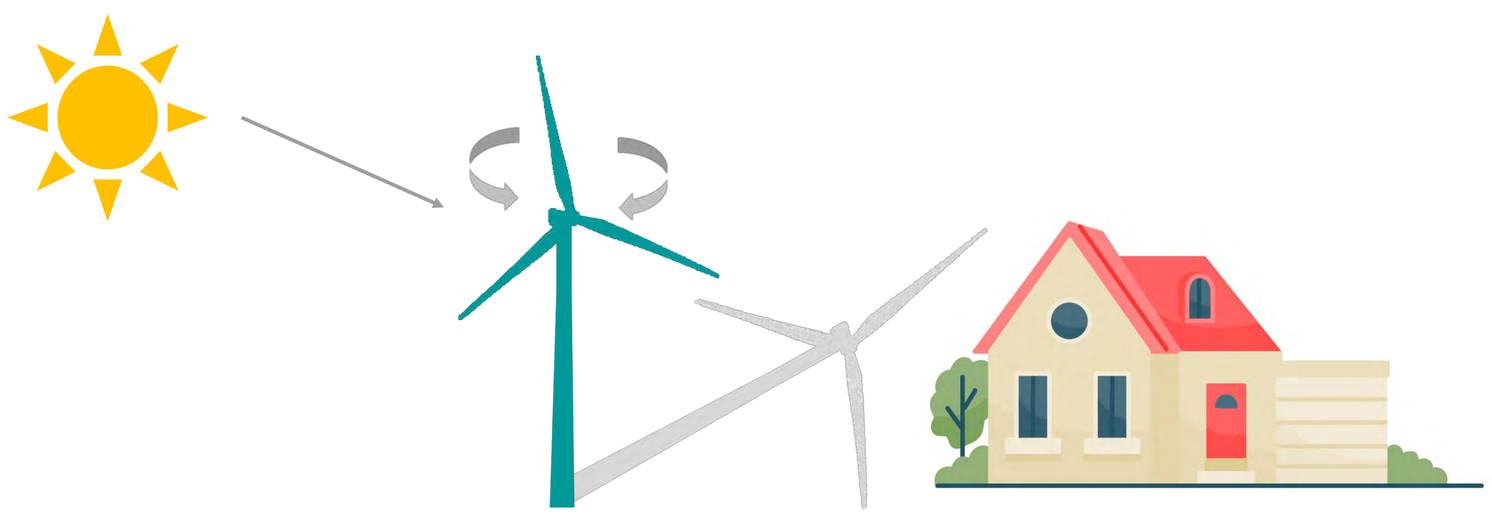
For context, 40 dBA is equivalent to the sound of a quiet library.

The Project will be designed to ensure that sound from wind turbines does not exceed the allowable sound level of **40 dBA**.



Shadow Flicker

Shadow flicker is an effect created by the rotating blades of a wind turbine casting shadows. The maximum allowable shadow flicker time is 30 hours/year. Industry standard software will be used to model the shadow hours casted by the proposed turbines and inform mitigation strategies if needed.



WEDGEPORT WIND FARM

Community Engagement

Wedgeport Wind Farm LP recognizes that support of the local community and landowners is key to a successful project, which is why we work diligently to make sure we listen and incorporate feedback.

Wedgeport Wind Farm LP has been working to engage with the community and project stakeholders and are open to discussing the Project and receiving feedback from interested parties. To date, our engagement activities include:

- Public open house
- Conversations with local landowners and residents
- Indigenous engagement
- Calls and meetings with local and provincial governing bodies
- Project updates sent via mailouts and published on our website at: **elementalenergy.ca/portfolio**
- Phone and email for any comments or inquiries: **development@elementalenergy.ca** and **604-558-8005**

WEDGEPORT WIND FARM

Frequently Asked Questions

HOW WILL THE PROPOSED PROJECT IMPACT PROPERTY VALUE?

There is a good summary of literature available on the Canadian Renewable Energy Association's website https://canwea.ca/communities/property-values/. They link to a wide range of property value studies compiled from across Canada and the US. The most comprehensive study "analyzed more than 50,000 home sales near 67 wind facilities across nine U.S. states over ten years and **found no statistical evidence that operating wind farms have had any measurable impacts on home sale prices.**

DOES LOW FREQUENCY SOUND, INFRASOUND, OR NOISE FROM WIND TURBINES NEGATIVELY IMPACT HUMAN HEALTH?

Health Canada completed a study reviewing more than 4,000 hours of wind turbine sound measurements and evaluating its impact on human health.

No association was found between wind turbines and:

- Self-reported sleep issues (e.g., general disturbance, use of sleep medication, diagnosed sleep disorders);
- Self-reported illnesses (e.g., dizziness, tinnitus, prevalence of frequent migraines and headaches) and chronic health conditions (e.g., heart disease, high blood pressure and diabetes);
- Self-reported perceived stress and quality of life impacts

WILL THERE BE ANY SOUND AND SHADOW FLICKER EFFECTS FROM THE PROJECT?

Wind turbines will be strategically sited to minimize potential sound and shadow flicker effects. Sound and shadow flicker studies will be conducted as part of our environmental assessment to assess potential noise and shadow flicker effects. As part of the environmental assessment, risk mitigation strategies will be created to mitigate potential noise and shadow flicker effects.

WEDGEPORT WIND FARM

Frequently Asked Questions

WILL THERE BE AN IMPACT ON THE ENVIRONMENT?

The Environmental Assessment studies wildlife and other environmental risks associated with wind farm construction and operations and will include risk mitigation strategies to mitigate impacts.

WHAT IS THE LIFETIME OF THE PROJECT AND WHAT ARE THE DECOMISSIONING PLANS?

The design life of a wind turbine is typically 25+ years. Decommissioning of both the turbines and the site, when it is necessary or desirable, will be undertaken in accordance with the regulatory regime in place at the time.

At the end of their useful life, the wind turbines will be decommissioned, and all equipment will be dismantled and disposed of in a manner that meets all regulatory requirements. The sections of the towers would be taken apart and would be reused, recycled or disposed of in accordance with regulatory requirements.

After the towers have been dismantled and removed from the site, the site itself would be restored to a state similar to what currently exists through regrading and revegetation.

There are a variety of ways in which developers are legally mandated to clean up after their projects reach their useful life. Firstly, our lease with the landowners has an obligation to restore the site. Secondly, we will file a decommissioning plan with the Government of Nova Scotia as part of the Environmental Assessment process which we'll need to follow as a condition of our permit.

WEDGEPORT WIND FARM

Thank you for attending!

We are committed to ongoing dialogue with our stakeholders. Please take a moment to complete a **Feedback Form** to share your thoughts on the proposed Project.

If you have any outstanding questions or concerns, we invite you to speak to one of our representatives today. If you prefer to get in touch with us later, our contact information is:

Tel.: 604-558-8005
Email: development@elementalenergy.ca
Web: elementalenergy.ca/portfolio/wedgeport-wind-farm/

APPENDIX J. PUBLIC INFORMATION SESSION FEEDBACK FORMS

Wedgeport Wind Farm — Feedback Form

OPEN HOUSE – APRIL 20, 2022

We Value Your Input

Please take a moment to share your thoughts with us.

How satisfied were you with the information provided at this event?

[ ] Satisfied [✓] Somewhat satisfied [ ] Not at all satisfied

Comments:

Still not wanting this in my area.

If you had questions or concerns, were representatives helpful in responding to them?

[✓] Yes [ ] No [ ] Not applicable

Comments:

Asking for more info in relation to my property. I am told will be provided at a later date

Was there any information you found particularly useful?

[ ] Yes [ ] Somewhat [ ] No

Comments:

n/a

Is there anything you would like more information on?

[ ] Yes [ ] No

Comments:

Visuals with turbine placements.

Thank you for attending!

Wedgeport Wind Farm

OPEN HOUSE – APRIL 20, 2022

Feedback Form

What opportunities would you like the Project to bring to the community?

N/a

Did you feel that appropriate COVID-19 measures were implemented during this event?

[✓] Yes [ ] No

Comments:

If you have additional comments or require further information, please describe below, and include your name and contact information so that we can provide a response.

[redacted]

Name

[redacted]

Phone or e-mail

Thank you for attending!

Wedgeport Wind Farm

Feedback Form

OPEN HOUSE – APRIL 20, 2022

What opportunities would you like the Project to bring to the community?

Did you feel that appropriate COVID-19 measures were implemented during this event?

[ ] Yes [ ] No

Comments:

If you have additional comments or require further information, please describe below, and include your name and contact information so that we can provide a response.

- Property value went down when previous turbines went in
- thinks the setback from homes should be 1.5 - 2 km
- previous turbines were constructed under shady circumstances
- ducks / bird impact
- he lives 900 meters from - see map attached

[redacted]

Name

Phone or e-mail

Thank you for attending!

APPENDIX K. NOISE IMPACT ASSESSMENT

Noise Impact Assessment

for the

Wedgeport Wind Farm Project

Prepared For

McCallum Environmental Inc.
115, 2 Bluewater Road
Bedford
Nova Scotia.
B4B 1G7

November 9, 2022

Prepared By

Nortek Resource Solutions Inc.
RR # 1
Thorburn, Nova Scotia
B0K 1W0
Tel (902) 922-3607

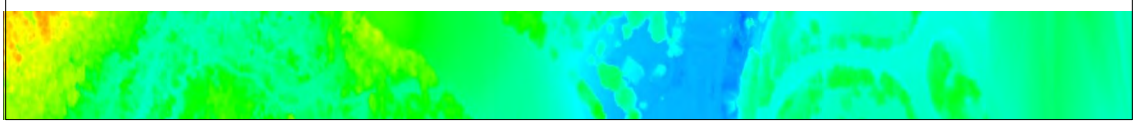


Table of Contents

1.0 Introduction

Wedgeport Wind Farm Limited Partnership by its general partner Wedgeport Wind Farm GP Inc. (Wedgeport Wind) is currently in the planning stages for developing the Wedgeport Wind Farm Project. The project will consist of up to 13 wind turbines which are planned to be built west of Wedgeport, Nova Scotia. While the final turbine model has not yet been determined, Wedgeport Wind has selected the Siemens Gamesa SG 6.6-170 turbine as this model represents the general range of turbine options being considered.

The following report summarizes the results of sound and shadow flicker modeling which will be incorporated into the Nova Scotia Environmental Assessment Registration Document.

2.0 Sound Analysis

2.1 Background

Nortek Resource Solutions Inc. has completed a noise impact assessment for the proposed Wedgeport Wind Farm Project. The objective of the analysis was to assess the impact of the the wind turbine sound emissions on surrounding dwellings. There are no municipally or provincially regulated restrictions on sound pressure levels from wind turbines, however, Nova Scotia Environment and Climate Change (NSECC) requires that predicted levels should not exceed 40 dBA for residential receptors which include homes, daycare facilities, hospitals and schools. This guideline was used for this assessment.

2.2 Methodology

The sound analysis was completed using WindPro 3.5.584 which provides a comprehensive suite of wind farm design and modeling software. The sound model is based on the *ISO 9613-2 – Attenuation of sound during propagation outdoors, Part 2*. This international standard provides a conservative estimate of sound propagation and subsequent environmental attenuation as a result of ground porosity, atmospheric attenuation and geometric spreading. A conservative modeling approach was utilized for this project by using the General Model with ground attenuation (porosity set at 0.5, midway between a hard and soft surface). This assumes the earths surface between the turbine and the receptor is not hard or soft, but at the midpoint between the two extremes. The ISO 9613-2 standard assumes an ambient air temperature of 10° C and 70% relative humidity which are ideal for atmospheric sound transfer. A meteorological coefficient can be assigned to the model to simulate sound damping due to unique meteorological conditions and noise propagation in the upwind direction. To maintain a conservative approach, a meteorological coefficient was not applied for this analysis. Additionally, the modeling assumes that all receptors are downwind of the wind turbine, which contributes to the conservative nature of the analysis. A hub height wind speed of 12 m/s was modeled as this represents the highest noise emissions from the various wind turbines.

In addition to the proposed 13 turbines, there are 3 existing wind turbines located in close proximity to the proposed project which were also included in the modeling. Table 1 summarizes the propose turbine positions and Table 2 summarizes the location of the existing turbines. Tables 3 to 5 summarize each of the turbine specifications. The total sound power output of the proposed as well as the existing turbines was supplied by their respective manufacturers and shown in Table 6.

Table 1: Proposed Turbine Positions

ID	Model	Easting* (m)	Northing* (m)
1	257,975	4,849,253	257,975
2	258,066	4,848,241	258,066
3	256,985	4,848,220	256,985
4	257,028	4,847,752	257,028
5	257,144	4,847,296	257,144
6	257,167	4,846,770	257,167
7	257,739	4,846,631	257,739
8	257,306	4,846,293	257,306
9	257,376	4,845,818	257,376
10	257,996	4,845,508	257,996
11	257,342	4,845,345	257,342
12	257,384	4,844,362	257,384
13	257,215	4,843,924	257,215

* UTM, NAD83, Zone 20

Table 2: Existing Turbine Positions

ID	Model	Easting* (m)	Northing* (m)
1	V100	256,033	4,848,952
2	V100	256,827	4,848,694
3	GE 1.6	257,521	4,848,505

* UTM, NAD83, Zone 20

Table 3: Proposed Turbine Specifications

Item	Specification
Manufacturer	Siemens Gamesa
Model	SG 6.6-170
Hub Height	110.5 m
Rotor Diameter	170 m
Operation Mode	Full Power
Rated Power Output	6,600 kW

Table 4: Existing Turbine Specifications - GE Wind

Item	Specification
Manufacturer	GE Wind
Model	1.6 1600
Hub Height	80
Rotor Diameter	82.5
Operation Mode	Level 0
Rated Power Output	1,600 kW

Table 5: Existing Turbine Specifications - Vestas

Item	Specification
Manufacturer	Vestas
Model	V100 2050
Hub Height	92
Rotor Diameter	100
Operation Mode	Level 0
Rated Power Output	2,050 kW

Table 6: Acoustic Emissions for the Proposed and Existing Turbines (dBA).

Status	Operational Mode	Wind Speed (m/s @ Hub Height)										
		3	4	5	6	7	8	9	10	11	12	Up to cut-out
Proposed	**SG 6.6-170**	92.0	92.0	94.5	98.4	101.8	104.7	106.0	106.0	106.0	106.0	106.0
Existing	**V100 2050**	93.9	96.6	99.8	102.7	103.4	103.5	103.5	103.5	103.5	103.5	103.5
Existing	**GE 1.6 1600**	94.0	94.0	96.0	100.0	103.0	105.0	105.0	105.0	105.0	105.0	105.0

The spatial location of a number of sample building receptors were extracted from the Nova Scotia Topographic database. A total of 32, representative receptors which were assumed to be homes based on a review of aerial and satellite imagery were included in the analysis. The location of the various receptors are shown in Figure 1. The individual modeled sound pressure levels for each receptor as well as location data are shown in Table 7

Figure 1: Modeled Sound Pressure Levels for the Proposed Wedgeport Wind Farm

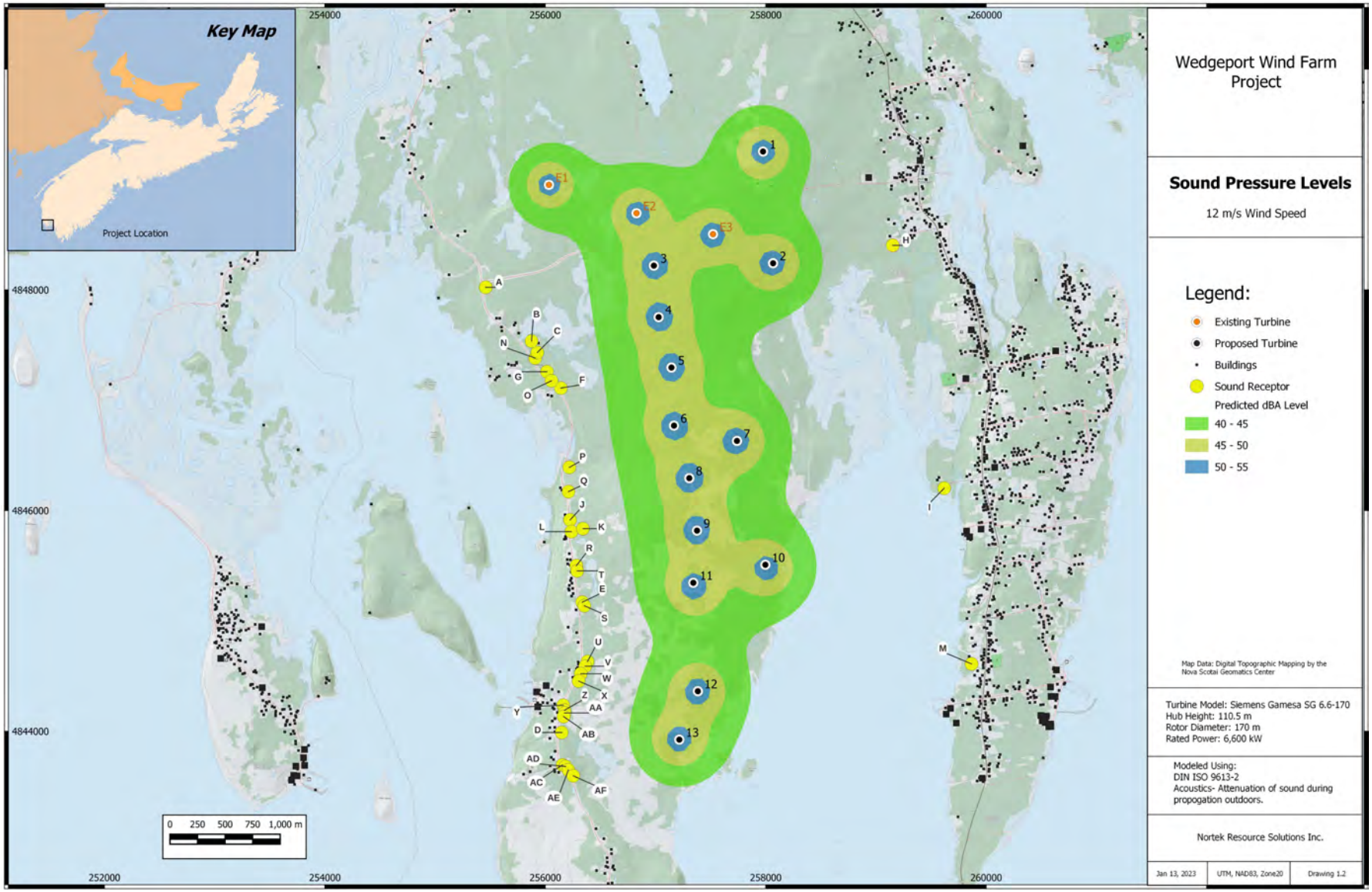


Table 7: Modeled Receptor Coordinates and Modeled Sound Levels.

ID	Easting* (m)	Northing* (m)	Elevation (m)	dBA
A	255,459	4,848,023	13	33.0
B	255,875	4,847,536	11	34.8
C	255,927	4,847,432	8	35.1
D	256,149	4,843,988	15	32.6
E	256,335	4,845,169	30	35.1
F	256,141	4,847,110	7	36.2
G	256,014	4,847,258	6	35.5
H	259,152	4,848,403	7	32.9
I	259,619	4,846,203	4	30.0
J	256,224	4,845,915	19	35.4
K	256,340	4,845,836	29	36.1
L	256,236	4,845,808	24	35.3
M	259,867	4,844,610	4	27.5
N	255,908	4,847,382	7	34.9
O	256,056	4,847,176	5	35.7
P	256,213	4,846,392	4	35.9
Q	256,210	4,846,171	10	35.6
R	256,281	4,845,500	30	35.2
S	256,354	4,845,137	30	35.1
T	256,289	4,845,453	30	35.2
U	256,383	4,844,632	24	34.9
V	256,362	4,844,589	23	34.7
W	256,321	4,844,521	21	34.4
X	256,302	4,844,454	19	34.2
Y	256,162	4,844,235	12	33.0
Z	256,174	4,844,190	12	33.1
AA	256,175	4,844,165	12	33.1
AB	256,166	4,844,133	12	33.0
AC	256,156	4,843,694	19	31.9
AD	256,184	4,843,680	19	32.1
AE	256,209	4,843,649	18	32.2
AF	256,253	4,843,596	16	32.3

* UTM, NAD83, Zone 20

2.3 Sound Modeling Results

The results of the analysis indicate that predicted sound pressure levels will not exceed 40 dBA for modeled receptors for the proposed turbine locations. Figure 1 shows that all of the buildings within the immediate

vicinity of the proposed wind farm meet the 40 dBA threshold for sound power levels. Therefore, no noise mitigation measures are recommended.

3.0 References

International Organization for Standardization (1996). ISO 9613-2: Acoustics –Attenuation of sound during propagation outdoors – Part 2: General method of calculation.

Ontario Ministry of the Environment (2008). Noise guidelines for wind farms. Ontario.

Nova Scotia Policy Division, Environmental Assessment Branch, Guide to Preparing an EA Registration Document for Wind Power Projects in Nova Scotia, May 2007, revised October 2021.

Nova Scotia Topographic Database, https://gis8.nsgc.gov.ns.ca/DataLocatorASP/main.html.

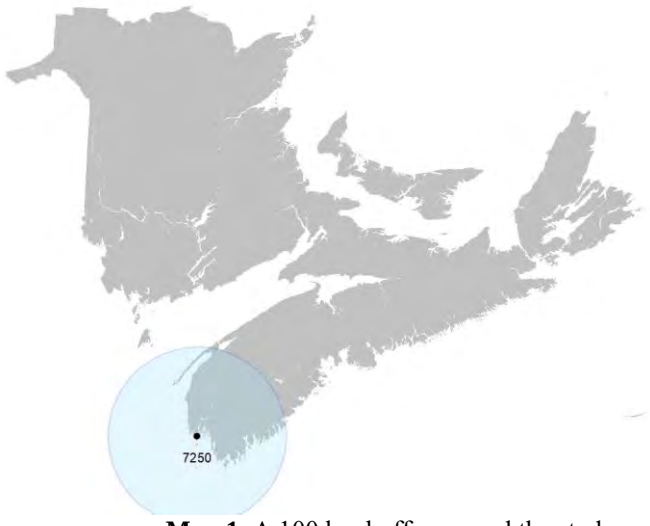
APPENDIX L. ACCDC REPORT

Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada atlantique

DATA REPORT 7250: Wedgeport, NS

Prepared 5 May 2022
by J. Churchill, Data Manager

CONTENTS OF REPORT



Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (AC CDC; www.accdc.com) is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The AC CDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Although a non-governmental agency, the AC CDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees.

Upon request and for a fee, the AC CDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the AC CDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

Filename	Contents
WedgeportNS_7250ob.xls	Rare or legally-protected Flora and Fauna in your study area
WedgeportNS_7250ob100km.xls	A list of Rare and legally protected Flora and Fauna within 100 km of your study area
WedgeportNS_7250msa.xls	Managed and Biologically Significant Areas in your study area

1.2 RESTRICTIONS

The AC CDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By accepting AC CDC data, recipients assent to the following limits of use:

a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
c) The AC CDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
d) AC CDC data responses are restricted to the data in our Data System at the time of the data request.
e) Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
f) AC CDC data responses are not to be construed as exhaustive inventories of taxa in an area.
g) The absence of a taxon cannot be inferred by its absence in an AC CDC data response.

1.3 ADDITIONAL INFORMATION

The accompanying Data Dictionary provides metadata for the data provided.

Please direct any additional questions about AC CDC data to the following individuals:

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney
Senior Scientist / Executive Director
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sean.blaney@accdc.ca

Animals (Fauna)
John Klymko
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(506) 364-2660
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Data Management, GIS
James Churchill
Conservation Data Analyst / Field Biologist
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Billing
Jean Breau
Financial Manager / Executive Assistant
(506) 364-2657
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Questions on the biology of Federal Species at Risk can be directed to AC CDC: (506) 364-2658, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Hubert Askanas, Energy and Resource Development: (506) 453-5873.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Donna Hurlburt, NS DLF: (902) 679-6886. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NS DLF Regional Biologist:

Western: Emma Vost
(902) 670-8187
Emma.Vost@novascotia.ca

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Elizabeth.Walsh@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

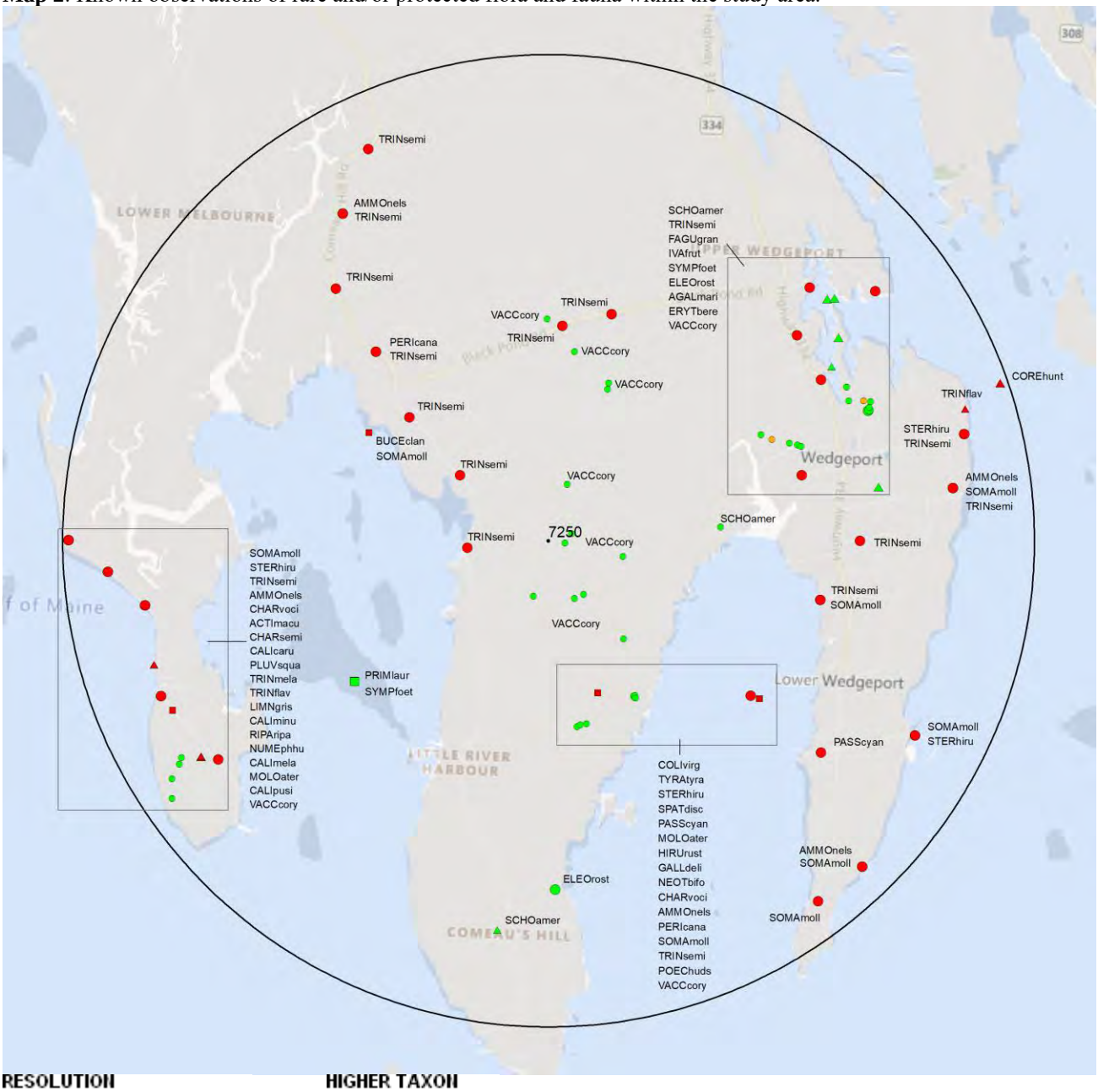
2.1 FLORA

The study area contains 46 records of 9 vascular, no records of nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

The study area contains 143 records of 28 vertebrate, 2 records of 1 invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within the study area.



RESOLUTION

- 4.7 within 50s of kilometers
- 4.0 within 10s of kilometers
- 3.7 within 5s of kilometers
- 3.0 within kilometers
- 2.7 within 500s of meters
- 2.0 within 100s of meters
- 1.7 within 10s of meters

HIGHER TAXON

- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

3.0 SPECIAL AREAS

3.1 MANAGED AREAS

The GIS scan identified 4 managed areas in the vicinity of the study area (Map 3 and attached file: *msa.xls).

3.2 SIGNIFICANT AREAS

The GIS scan identified 2 biologically significant sites in the vicinity of the study area (Map 3 and attached file: *msa.xls).

Map 3: Boundaries and/or locations of known Managed and Significant Areas within the study area.

4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the study area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
P	*Agalinis maritima*	Saltmarsh Agalinis				S2	7	2.7 ± 0.0
P	*Iva frutescens*	Big-leaved Marsh-elder				S3	1	3.4 ± 0.0
P	*Primula laurentiana*	Laurentian Primrose				S3	1	2.5 ± 7.0
P	*Eleocharis rostellata*	Beaked Spikerush				S3	4	2.4 ± 0.0
P	*Schoenoplectus americanus*	Olney's Bulrush				S3	6	1.8 ± 0.0
P	*Neottia bifolia*	Southern Twayblade				S3	4	1.8 ± 0.0
P	*Vaccinium corymbosum*	Highbush Blueberry				S3S4	20	0.2 ± 0.0
P	*Fagus grandifolia*	American Beech				S3S4	1	3.4 ± 0.0
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S3S4	2	2.5 ± 7.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)
A	*Coregonus huntsmani*	Atlantic Whitefish	Endangered	Endangered	Endangered	S1	1	4.9 ± 1.0
A	*Colinus virginianus*	Northern Bobwhite	Endangered	Endangered			2	2.6 ± 0.0
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened	Endangered	S2B	2	4.2 ± 1.0
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S3M	8	4.2 ± 0.0
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Endangered	S3B	1	2.7 ± 5.0
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	4	2.7 ± 5.0
A	*Ammospiza nelsoni*	Nelson's Sparrow	Not At Risk			S3S4B	6	2.7 ± 5.0
A	*Calidris canutus rufa*	Red Knot rufa subspecies - Tierra del Fuego / Patagonia wintering population	E,SC	Endangered	Endangered	S2M	1	4.3 ± 0.0
A	*Passerina cyanea*	Indigo Bunting				S1?B,SUM	2	2.7 ± 5.0
A	*Charadrius semipalmatus*	Semipalmated Plover				S1B,S4M	8	4.2 ± 0.0
A	*Calidris minutilla*	Least Sandpiper				S1B,S4M	6	4.2 ± 0.0
A	*Molothrus ater*	Brown-headed Cowbird				S2B	2	2.7 ± 5.0
A	*Bucephala clangula*	Common Goldeneye				S2S3B,S5N,S5M	1	2.2 ± 5.0
A	*Numenius phaeopus hudsonicus*	Whimbrel				S2S3M	1	4.2 ± 0.0
A	*Perisoreus canadensis*	Canada Jay				S3	3	1.6 ± 5.0
A	*Poecile hudsonicus*	Boreal Chickadee				S3	3	1.6 ± 5.0
A	*Spatula discors*	Blue-winged Teal				S3B	1	2.7 ± 5.0
A	*Charadrius vociferus*	Killdeer				S3B	6	2.7 ± 5.0
A	*Tringa semipalmata*	Willet				S3B	38	0.8 ± 0.0
A	*Tyrannus tyrannus*	Eastern Kingbird				S3B	1	2.7 ± 5.0
A	*Somateria mollissima*	Common Eider				S3B,S3M,S3N	15	1.6 ± 5.0
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S4M	10	4.2 ± 0.0
A	*Gallinago delicata*	Wilson's Snipe				S3B,S5M	1	2.7 ± 5.0
A	*Pluvialis squatarola*	Black-bellied Plover				S3M	4	4.2 ± 0.0
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	7	4.2 ± 0.0
A	*Calidris melanotos*	Pectoral Sandpiper				S3M	1	4.2 ± 0.0
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	5	4.2 ± 0.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	3	4.3 ± 0.0
I	*Erythrodiplax berenice*	Seaside Dragonlet				S3S4	2	2.5 ± 0.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting your study area are indicated below with "YES".

Nova Scotia

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within the Study Site?
Fraxinus nigra	Black Ash		Threatened	No
Emydoidea blandingii	*Blanding's Turtle - Nova Scotia pop.*	Endangered	Vulnerable	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	No
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	No
Bat hibernaculum or bat species occurrence		**[Endangered][1]**	**[Endangered][1]**	**YES**

1 *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NS Endangered Species Act.

4.4 SOURCE BIBLIOGRAPHY

The recipient of these data shall acknowledge the AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
59	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
34	Morrison, Guy. 2011. Maritime Shorebird Survey (MSS) database. Canadian Wildlife Service, Ottawa, 15939 surveys. 86171 recs.
28	Paquet, Julie. 2018. Atlantic Canada Shorebird Survey (ACSS) database 2012-2018. Environment Canada, Canadian Wildlife Service.
19	LaPaix, R.W.; Crowell, M.J.; MacDonald, M. 2011. Stantec rare plant records, 2010-11. Stantec Consulting, 334 recs.
15	Pardieck, K.L., Ziolkowski Jr., D.J., Lutmerding, M., Aponte, V.I., and Hudson, M-A.R. 2020. North American Breeding Bird Survey Dataset 1966 - 2019: U.S. Geological Survey data release, https://doi.org/10.5066/P9J6QUF6
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5	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
5	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
4	Robinson, S.L. 2014. 2013 Field Data. Atlantic Canada Conservation Data Centre.
3	Hicks, Andrew. 2009. Coastal Waterfowl Surveys Database, 2000-08. Canadian Wildlife Service, Sackville, 46488 recs (11149 non-zero).
3	Nova Scotia Dept Natural Resources, Forestry Branch. 2007. Restricted & Limited Use Land Database (RLUL). , http://www.gov.ns.ca/natr/FORESTRY/rlul/downloadrlul.htm.
2	Benjamin, L.K. (compiler). 2012. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 4965 recs.
2	eBird. 2020. eBird Basic Dataset. Version: EBD_relNov-2019. Ithaca, New York. Nov 2019, Cape Breton Bras d'Or Lakes Watershed subset. Cornell Lab of Ornithology.
1	Cameron, R.P. 2017. 2017 rare species field data. Nova Scotia Environment, 64 recs.
1	Canadian Wildlife Service. 2019. Canadian Protected and Conserved Areas Database (CPCAD). December 2019. ECCC.https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/protected-conserved-areas-database.html.
1	Edge, Thomas A. 1984. Status report on the Atlantic Whitefish (Coregonus huntsmani). Committee on the Status of Endangered Wildlife in Canada.
1	Erskine, A.J. 1992. Maritime Breeding Bird Atlas Database. NS Museum & Nimbus Publ., Halifax, 82,125 recs.
1	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 26892 records of 138 vertebrate and 269 records of 30 invertebrate fauna; 14181 records of 182 vascular, 4607 records of 122 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs (including “location-sensitive” species). All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Coregonus huntsmani*	Atlantic Whitefish	Endangered	Endangered	Endangered	S1	5	4.9 ± 1.0	NS
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	215	4.6 ± 0.0	NS
A	*Myotis septentrionalis*	Northern Myotis	Endangered	Endangered	Endangered	S1	44	24.5 ± 0.0	NS
A	*Perimyotis subflavus*	Tricolored Bat	Endangered	Endangered	Endangered	S1	97	41.9 ± 0.0	NS
A	*Emydoidea blandingii*	Blanding's Turtle	Endangered	Endangered	Endangered	S1	4411	68.7 ± 24.0	NS
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy population	Endangered	Endangered		S1	2	95.0 ± 1.0	NS
A	*Salmo salar pop. 6*	Atlantic Salmon - Nova Scotia Southern Upland population	Endangered			S1	11	9.3 ± 1.0	NS
A	*Charadrius melodus melodus*	Piping Plover melodus subspecies	Endangered	Endangered	Endangered	S1B	1769	5.1 ± 0.0	NS
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1B	111	5.6 ± 0.0	NS
A	*Morone saxatilis pop. 2*	Striped Bass - Bay of Fundy population	Endangered			S2S3B,S2S3N	1	54.4 ± 1.0	NS
A	*Protonotaria citrea*	Prothonotary Warbler	Endangered	Endangered		SNA	4	22.5 ± 0.0	NS
A	*Icteria virens*	Yellow-Breasted Chat	Endangered	Endangered		SNA	2	14.5 ± 0.0	NS
A	*Caretta caretta*	Loggerhead Sea Turtle	Endangered	Endangered		SNA	1	72.6 ± 0.0	NS
A	*Colinus virginianus*	Northern Bobwhite	Endangered	Endangered			5	2.6 ± 0.0	NS
A	*Antrostomus vociferus*	Eastern Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	4	5.4 ± 7.0	NS
A	*Asio flammeus*	Short-eared Owl	Threatened	Special Concern		S1B	7	11.4 ± 0.0	NS
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2	2	59.5 ± 5.0	NS
A	*Riparia riparia*	Bank Swallow	Threatened	Threatened	Endangered	S2B	432	4.2 ± 1.0	NS
A	*Thamnophis saurita*	Eastern Ribbonsnake	Threatened	Threatened	Threatened	S2S3	1415	49.3 ± 0.0	NS
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Endangered	S2S3B,S1M	157	11.7 ± 7.0	NS
A	*Limosa haemastica*	Hudsonian Godwit	Threatened			S2S3M	204	5.1 ± 0.0	NS
A	*Dolichonyx oryzivorus*	Bobolink	Threatened	Threatened	Vulnerable	S3B	62	5.4 ± 7.0	NS
A	*Hydrobates leucorhous*	Leach's Storm-Petrel	Threatened			S3B	64	11.5 ± 5.0	NS
A	*Tringa flavipes*	Lesser Yellowlegs	Threatened			S3M	478	4.2 ± 0.0	NS
A	*Anguilla rostrata*	American Eel	Threatened			S3N	253	76.9 ± 0.0	NS
A	*Ixobrychus exilis*	Least Bittern	Threatened	Threatened		SUB	1	45.2 ± 0.0	NS
A	*Hylocichla mustelina*	Wood Thrush	Threatened	Threatened		SUB	14	10.1 ± 7.0	NS
A	*Passerculus sandwichensis princeps*	Ipswich Sparrow	Special Concern	Special Concern		S1B	5	11.2 ± 0.0	NS
A	*Bucephala islandica*	Barrow's Goldeneye	Special Concern	Special Concern		S1N,SUM	1	13.7 ± 0.0	NS
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	91	11.7 ± 7.0	NS
A	*Balaenoptera physalus*	Fin Whale	Special Concern	Special Concern		S2S3	1	79.6 ± 50.0	NS
A	*Phalaropus lobatus*	Red-necked Phalarope	Special Concern	Special Concern		S2S3M	14	19.5 ± 2.0	NS
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern population	Special Concern	Special Concern	Endangered	S2S3N,SUM	34	7.0 ± 0.0	NS
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	115	13.4 ± 0.0	NS
A	*Hirundo rustica*	Barn Swallow	Special Concern	Threatened	Endangered	S3B	497	2.7 ± 5.0	NS
A	*Cardellina canadensis*	Canada Warbler	Special Concern	Threatened	Endangered	S3B	256	14.2 ± 0.0	NS
A	*Chordeiles minor*	Common Nighthawk	Special Concern	Threatened	Threatened	S3B	206	16.7 ± 0.0	NS
A	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Threatened	Threatened	S3B	453	14.0 ± 0.0	NS
A	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B,S3N,S3M	319	18.1 ± 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
A	*Podiceps auritus*	Horned Grebe	Special Concern	Special Concern		S3N,SUM	7	42.5 ± 10.0	NS
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	538	8.1 ± 0.0	NS
A	*Phocoena phocoena*	Harbour Porpoise	Special Concern			S4	13	11.5 ± 16.0	NS
A	*Chrysemys picta picta*	Eastern Painted Turtle	Special Concern	Special Concern		S4	145	10.1 ± 10.0	NS
A	*Calidris subruficollis*	Buff-breasted Sandpiper	Special Concern	Special Concern		SNA	65	8.7 ± 0.0	NS
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1?B,SUN,SUM	3	44.0 ± 0.0	NS
A	*Fulica americana*	American Coot	Not At Risk			S1B	1	58.6 ± 0.0	NS
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Not At Risk	Special Concern	Vulnerable	S1B,SUM	7	43.3 ± 0.0	NS
A	*Lynx canadensis*	Canada Lynx	Not At Risk		Endangered	S2S3	1	47.6 ± 1.0	NS
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S3	8	22.2 ± 0.0	NS
A	*Megaptera novaeangliae*	Humpback Whale	Not At Risk			S3	13	23.4 ± 0.0	NS
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	261	2.7 ± 5.0	NS
A	*Sialia sialis*	Eastern Bluebird	Not At Risk			S3B	22	7.4 ± 0.0	NS
A	*Buteo lagopus*	Rough-legged Hawk	Not At Risk			S3N	2	38.6 ± 0.0	NS
A	*Accipiter gentilis*	Northern Goshawk	Not At Risk			S3S4	15	18.1 ± 7.0	NS
A	*Glaucomys volans*	Southern Flying Squirrel	Not At Risk			S3S4	8	82.9 ± 0.0	NS
A	*Lagenorhynchus acutus*	Atlantic White-sided Dolphin	Not At Risk			S3S4	2	67.3 ± 0.0	NS
A	*Ammospiza nelsoni*	Nelson's Sparrow	Not At Risk			S3S4B	93	2.7 ± 5.0	NS
A	*Calidris canutus rufa*	Red Knot rufa subspecies - Tierra del Fuego / Patagonia wintering population	E,SC	Endangered	Endangered	S2M	319	4.3 ± 0.0	NS
A	*Morone saxatilis*	Striped Bass	E,SC			S2S3B,S2S3N	8	7.6 ± 1.0	NS
A	*Alces alces americana*	Moose			Endangered	S1	116	24.8 ± 1.0	NS
A	*Uria aalge*	Common Murre				S1?B	5	11.2 ± 0.0	NS
A	*Passerina cyanea*	Indigo Bunting				S1?B,SUM	23	2.7 ± 5.0	NS
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1B	23	20.5 ± 7.0	NS
A	*Gallinula galeata*	Common Gallinule				S1B	1	45.2 ± 0.0	NS
A	*Myiarchus crinitus*	Great Crested Flycatcher				S1B	20	18.1 ± 7.0	NS
A	*Cistothorus palustris*	Marsh Wren				S1B	2	13.4 ± 0.0	NS
A	*Mimus polyglottos*	Northern Mockingbird				S1B	12	10.1 ± 7.0	NS
A	*Toxostoma rufum*	Brown Thrasher				S1B	5	10.1 ± 7.0	NS
A	*Charadrius semipalmatus*	Semipalmated Plover				S1B,S4M	1230	4.2 ± 0.0	NS
A	*Calidris minutilla*	Least Sandpiper				S1B,S4M	841	4.2 ± 0.0	NS
A	*Anas acuta*	Northern Pintail				S1B,SUM	4	11.7 ± 7.0	NS
A	*Vireo gilvus*	Warbling Vireo				S1B,SUM	12	13.1 ± 0.0	NS
A	*Vespertilionidae sp.*	bat species				S1S2	85	13.1 ± 0.0	NS
A	*Vireo philadelphicus*	Philadelphia Vireo				S2?B,SUM	8	8.4 ± 0.0	NS
A	*Alca torda*	Razorbill				S2B	20	5.4 ± 7.0	NS
A	*Fratercula arctica*	Atlantic Puffin				S2B	48	5.4 ± 7.0	NS
A	*Empidonax traillii*	Willow Flycatcher				S2B	17	11.9 ± 1.0	NS
A	*Molothrus ater*	Brown-headed Cowbird				S2B	56	2.7 ± 5.0	NS
A	*Spatula clypeata*	Northern Shoveler				S2B,SUM	4	31.8 ± 7.0	NS
A	*Mareca strepera*	Gadwall				S2B,SUM	8	31.5 ± 5.0	NS
A	*Piranga olivacea*	Scarlet Tanager				S2B,SUM	22	23.2 ± 0.0	NS
A	*Calidris alba*	Sanderling				S2N,S3M	819	5.1 ± 0.0	NS
A	*Martes americana*	American Marten			Endangered	S2S3	19	37.8 ± 0.0	NS
A	*Asio otus*	Long-eared Owl				S2S3	8	36.2 ± 7.0	NS
A	*Rissa tridactyla*	Black-legged Kittiwake				S2S3B	1	22.4 ± 0.0	NS
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B	65	5.4 ± 7.0	NS
A	*Phalacrocorax carbo*	Great Cormorant				S2S3B,S2S3N	40	37.7 ± 9.0	NS
A	*Cathartes aura*	Turkey Vulture				S2S3B,S4S5M	23	17.6 ± 0.0	NS
A	*Setophaga pinus*	Pine Warbler				S2S3B,S4S5M	6	39.0 ± 7.0	NS
A	*Bucephala clangula*	Common Goldeneye				S2S3B,S5N,S5M	63	2.2 ± 5.0	NS
A	*Icterus galbula*	Baltimore Oriole				S2S3B,SUM	33	10.1 ± 7.0	NS
A	*Pluvialis dominica*	American Golden-Plover				S2S3M	142	5.1 ± 0.0	NS
A	*Numenius phaeopus hudsonicus*	Whimbrel				S2S3M	398	4.2 ± 0.0	NS

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A	*Phalaropus fulicarius*	Red Phalarope				S2S3M	14	45.2 ± 0.0	NS
A	*Perisoreus canadensis*	Canada Jay				S3	160	1.6 ± 5.0	NS
A	*Poecile hudsonicus*	Boreal Chickadee				S3	186	1.6 ± 5.0	NS
A	*Spinus pinus*	Pine Siskin				S3	77	10.1 ± 7.0	NS
A	*Salvelinus fontinalis*	Brook Trout				S3	10	63.3 ± 0.0	NS
A	*Pekania pennanti*	Fisher				S3	2	56.9 ± 0.0	NS
A	*Calcarius lapponicus*	Lapland Longspur				S3?N,SUM	2	45.2 ± 0.0	NS
A	*Spatula discors*	Blue-winged Teal				S3B	18	2.7 ± 5.0	NS
A	*Charadrius vociferus*	Killdeer				S3B	381	2.7 ± 5.0	NS
A	*Tringa semipalmata*	Willet				S3B	1559	0.8 ± 0.0	NS
A	*Sterna paradisaea*	Arctic Tern				S3B	109	5.6 ± 0.0	NS
A	*Cepphus grylle*	Black Guillemot				S3B	3	91.8 ± 40.0	NB
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	28	10.1 ± 7.0	NS
A	*Tyrannus tyrannus*	Eastern Kingbird				S3B	61	2.7 ± 5.0	NS
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S3B	77	10.1 ± 7.0	NS
A	*Alosa pseudoharengus*	Alewife				S3B	20	5.4 ± 1.0	NS
A	*Somateria mollissima*	Common Eider				S3B,S3M,S3N	469	1.6 ± 5.0	NS
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S4M	1069	4.2 ± 0.0	NS
A	*Falco sparverius*	American Kestrel				S3B,S4S5M	44	17.5 ± 7.0	NS
A	*Gallinago delicata*	Wilson's Snipe				S3B,S5M	189	2.7 ± 5.0	NS
A	*Setophaga striata*	Blackpoll Warbler				S3B,S5M	47	8.3 ± 0.0	NS
A	*Cardellina pusilla*	Wilson's Warbler				S3B,S5M	26	18.1 ± 7.0	NS
A	*Pinicola enucleator*	Pine Grosbeak				S3B,S5N,S5M	45	28.0 ± 7.0	NS
A	*Setophaga tigrina*	Cape May Warbler				S3B,SUM	31	13.2 ± 0.0	NS
A	*Branta bernicla*	Brant				S3M	13	5.5 ± 10.0	NS
A	*Pluvialis squatarola*	Black-bellied Plover				S3M	1062	4.2 ± 0.0	NS
A	*Arenaria interpres*	Ruddy Turnstone				S3M	566	5.1 ± 0.0	NS
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	1237	4.2 ± 0.0	NS
A	*Calidris melanotos*	Pectoral Sandpiper				S3M	202	4.2 ± 0.0	NS
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	700	4.2 ± 0.0	NS
A	*Chroicocephalus ridibundus*	Black-headed Gull				S3N	3	22.5 ± 0.0	NS
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	29	29.7 ± 7.0	NS
A	*Loxia curvirostra*	Red Crossbill				S3S4	101	14.2 ± 1.0	NS
A	*Botaurus lentiginosus*	American Bittern				S3S4B,S4S5M	61	10.1 ± 7.0	NS
A	*Setophaga castanea*	Bay-breasted Warbler				S3S4B,S4S5M	125	8.2 ± 0.0	NS
A	*Actitis macularius*	Spotted Sandpiper				S3S4B,S5M	519	4.3 ± 0.0	NS
A	*Leiothlypis peregrina*	Tennessee Warbler				S3S4B,S5M	44	11.7 ± 7.0	NS
A	*Passerella iliaca*	Fox Sparrow				S3S4B,S5M	33	8.1 ± 7.0	NS
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5M,S5N	26	8.1 ± 7.0	NS
A	*Calidris maritima*	Purple Sandpiper				S3S4N	50	19.4 ± 0.0	NS
A	*Lanius borealis*	Northern Shrike				S3S4N	2	37.4 ± 0.0	NS
A	*Morus bassanus*	Northern Gannet				SHB	10	11.2 ± 0.0	NS
A	*Leucophaeus atricilla*	Laughing Gull				SHB	4	42.3 ± 0.0	NS
A	*Progne subis*	Purple Martin				SHB	1	45.2 ± 0.0	NS
A	*Eremophila alpestris*	Horned Lark				SHB,S4S5N,S5M	4	14.0 ± 0.0	NS
I	*Bombus bohemicus*	Ashton Cuckoo Bumble Bee	Endangered	Endangered	Endangered	S1	2	40.1 ± 5.0	NS
I	*Danaus plexippus*	Monarch	Endangered	Special Concern	Endangered	S2?B,S3M	132	8.4 ± 0.0	NS
I	*Danaus plexippus plexippus*	Monarch	Endangered	Special Concern		S2?B,S3M	1	37.6 ± 0.0	NS
I	*Bombus suckleyi*	Suckley's Cuckoo Bumble Bee	Threatened			SH	1	40.0 ± 0.0	NS
I	*Bombus terricola*	Yellow-banded Bumble Bee	Special Concern	Special Concern	Vulnerable	S3	26	10.9 ± 0.0	NS
I	*Pachydiplax longipennis*	Blue Dasher				S1	1	45.2 ± 0.0	NS
I	*Atlanticoncha ochracea*	Tidewater Mucket				S1	1	62.4 ± 0.0	NS
I	*Pantala hymenaea*	Spot-Winged Glider				S2?B	2	45.2 ± 0.0	NS
I	*Nymphalis l-album*	Compton Tortoiseshell				S2S3	3	14.3 ± 2.0	NS
I	*Hippodamia parenthesis*	Parenthesis Lady Beetle				S3	1	31.1 ± 0.0	NS
I	*Naemia seriata*	Seaside Lady Beetle				S3	4	10.9 ± 0.0	NS
I	*Chilocorus stigma*	Twice-stabbed Lady Beetle				S3	1	97.1 ± 0.0	NS

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I	*Myzia pullata*	Streaked Lady Beetle				S3	1	10.9 ± 0.0	NS
I	*Astylopsis sexguttata*	Six-speckled Long-horned Beetle				S3	1	80.6 ± 0.0	NS
I	*Satyrium calanus*	Banded Hairstreak				S3	1	53.1 ± 2.0	NS
I	*Strymon melinus*	Gray Hairstreak				S3	1	57.0 ± 0.0	NS
I	*Ophiogomphus aspersus*	Brook Snaketail				S3	2	79.6 ± 0.0	NS
I	*Epitheca princeps*	Prince Baskettail				S3	3	87.3 ± 1.0	NS
I	*Polygonia interrogationis*	Question Mark				S3B	15	12.8 ± 2.0	NS
I	*Amblyscirtes hegon*	Pepper and Salt Skipper				S3S4	1	14.8 ± 2.0	NS
I	*Argynnis aphrodite*	Aphrodite Fritillary				S3S4	4	38.4 ± 0.0	NS
I	*Polygonia faunus*	Green Comma				S3S4	1	78.1 ± 20.0	NS
I	*Aeshna clepsydra*	Mottled Darner				S3S4	15	35.7 ± 0.0	NS
I	*Aeshna constricta*	Lance-Tipped Darner				S3S4	1	72.3 ± 0.0	NS
I	*Boyeria grafiana*	Ocellated Darner				S3S4	5	18.9 ± 0.0	NS
I	*Gomphaeschna furcillata*	Harlequin Darner				S3S4	1	57.6 ± 0.0	NS
I	*Erythrodiplax berenice*	Seaside Dragonlet				S3S4	32	2.5 ± 0.0	NS
I	*Nannothemis bella*	Elfin Skimmer				S3S4	4	51.6 ± 0.0	NS
I	*Enallagma vesperum*	Vesper Bluet				S3S4	3	35.7 ± 0.0	NS
I	*Amphiagrion saucium*	Eastern Red Damsel				S3S4	3	39.6 ± 1.0	NS
N	*Erioderma mollissimum*	Graceful Felt Lichen	Endangered	Endangered	Endangered	S1	304	13.7 ± 0.0	NS
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	52	20.4 ± 0.0	NS
N	*Pannaria lurida*	Wrinkled Shingle Lichen	Threatened	Threatened	Threatened	S2S3	63	28.5 ± 0.0	NS
N	*Pannaria lurida ssp. russellii*	Wrinkled Shingle Lichen	Threatened	Threatened		S2S3	1	96.7 ± 0.0	NS
N	*Anzia colpodes*	Black-foam Lichen	Threatened	Threatened	Threatened	S3	180	13.7 ± 0.0	NS
N	*Fuscopannaria leucosticta*	White-rimmed Shingle Lichen	Threatened			S3	394	33.4 ± 0.0	NS
N	*Pectenia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	757	12.9 ± 0.0	NS
N	*Sclerophora peronella (Atlantic pop.)*	Frosted Glass-whiskers (Atlantic population)	Special Concern	Special Concern		S3S4	95	48.6 ± 0.0	NS
N	*Pseudevernia cladonia*	Ghost Antler Lichen	Not At Risk			S2S3	13	15.0 ± 30.0	NS
N	*Frullania selwyniana*	Selwyn's Scalewort				S1	8	38.7 ± 0.0	NS
N	*Harpalejeunea molleri ssp. integra*	a liverwort				S1	3	39.1 ± 0.0	NS
N	*Homalotheciella subcapillata*	Few-haired Moss				S1	1	44.0 ± 0.0	NS
N	*Orthotrichum pallens*	Pale Bristle Moss				S1	1	97.5 ± 0.0	NS
N	*Sphagnum carolinianum*	Carolina Peat Moss				S1	1	64.0 ± 0.0	NS
N	*Cyrto-hypnum minutulum*	Tiny Cedar Moss				S1	1	97.7 ± 0.0	NS
N	*Umbilicaria vellea*	Grizzled Rocktripe Lichen				S1	3	88.6 ± 0.0	NS
N	*Heterodermia leucomela*	Elegant Fringe Lichen				S1	4	39.2 ± 0.0	NS
N	*Flavoparmelia baltimorensis*	Rock Greenshield Lichen				S1	1	95.7 ± 1.0	NS
N	*Ephebe hispidula*	Dryside Rockshag Lichen				S1	1	98.7 ± 1.0	NS
N	*Parmotrema perforatum*	Perforated Ruffle Lichen				S1	4	93.6 ± 0.0	NS
N	*Sticta limbata*	Powdered Moon Lichen				S1	9	29.3 ± 0.0	NS
N	*Leptogium hibernicum*	Hibernia Jellyskin Lichen				S1	53	38.6 ± 0.0	NS
N	*Hypotrachyna horrescens*	Hairy-spined Shield Lichen				S1	4	29.0 ± 0.0	NS
N	*Hypogymnia hultenii*	Powdered Honeycomb Lichen				S1	3	63.4 ± 0.0	NS
N	*Campylostelium saxicola*	a Moss				S1?	1	98.7 ± 1.0	NS
N	*Grimmia anodon*	Toothless Grimmia Moss				S1?	2	96.1 ± 3.0	NS
N	*Homomallium adnatum*	Adnate Hairy-gray Moss				S1?	2	21.8 ± 1.0	NS
N	*Sphagnum cyclophyllum*	a Moss				S1?	11	37.3 ± 0.0	NS
N	*Sphagnum molle*	Blushing Peat Moss				S1?	2	23.4 ± 0.0	NS
N	*Syntrichia ruralis*	a Moss				S1?	1	72.4 ± 0.0	NS
N	*Enchylium limosum*	Lime-loving Tarpaper Lichen				S1?	1	40.8 ± 0.0	NS
N	*Scytinium intermedium*	Forty-five Jellyskin Lichen				S1?	1	38.3 ± 1.0	NS
N	*Peltigera malacea*	Veinless Pelt Lichen				S1?	1	84.0 ± 0.0	NS
N	*Metzgeria crassipilis*	Hairy Veilwort				S1S2	3	56.3 ± 0.0	NS

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N	*Sphagnum trinitense*	a peatmoss				S1S2	6	23.4 ± 0.0	NS
N	*Tortula mucronifolia*	Mucronate Screw Moss				S1S2	1	96.1 ± 3.0	NS
N	*Pseudotaxiphyllum distichaceum*	a Moss				S1S2	4	32.2 ± 0.0	NS
N	*Parmotrema reticulatum*	Netted Ruffle Lichen				S1S2	8	21.8 ± 1.0	NS
N	*Cladonia subtenuis*	Dixie Reindeer Lichen				S1S2	1	42.5 ± 0.0	NS
N	*Parmeliella parvula*	Poor-man's Shingles Lichen				S1S2	40	67.7 ± 0.0	NS
N	*Umbilicaria polyrhiza*	Ballpoint Rocktripe Lichen				S1S3	1	95.7 ± 1.0	NS
N	*Usnea fragilescens*	Inflationary Beard Lichen				S1S3	2	31.0 ± 40.0	NS
N	*Stereocaulon grande*	Grand Foam Lichen				S1S3	1	53.4 ± 0.0	NS
N	*Anacamptodon splachnoides*	a Moss				S2	1	95.3 ± 0.0	NS
N	*Sphagnum platyphyllum*	Flat-leaved Peat Moss				S2	1	37.6 ± 0.0	NS
N	*Sphagnum subnitens*	Lustrous Peat Moss				S2	4	91.3 ± 0.0	NS
N	*Usnea flavocardia*	Blood-splattered Beard Lichen				S2	1	90.7 ± 1.0	NS
N	*Cystocoleus ebeneus*	Rockgossamer Lichen				S2	2	95.3 ± 0.0	NS
N	*Hypotrachyna catawbiensis*	Powder-tipped Antler Lichen				S2	30	63.4 ± 0.0	NS
N	*Nephroma resupinatum*	a lichen				S2	3	64.8 ± 0.0	NS
N	*Atrichum angustatum*	Lesser Smoothcap Moss				S2?	6	87.0 ± 3.0	NS
N	*Ptychostomum pendulum*	Drooping Bryum				S2?	3	50.6 ± 0.0	NS
N	*Drepanocladus polygamus*	Polygamous Hook Moss				S2?	1	97.7 ± 0.0	NS
N	*Pseudocampylium radicale*	Long-stalked Fine Wet Moss				S2?	2	97.4 ± 0.0	NS
N	*Climacium americanum*	American Tree Moss				S2?	3	95.9 ± 0.0	NS
N	*Dicranum condensatum*	Condensed Broom Moss				S2?	3	47.0 ± 0.0	NS
N	*Ditrichum rhynchostegium*	a Moss				S2?	3	95.0 ± 5.0	NS
N	*Fissidens bushii*	Bush's Pocket Moss				S2?	2	87.0 ± 3.0	NS
N	*Fontinalis hypnoides*	a moss				S2?	1	97.3 ± 0.0	NS
N	*Fontinalis sullivantii*	Sullivant's Water Moss				S2?	3	55.7 ± 4.0	NS
N	*Grimmia olneyi*	a Moss				S2?	8	91.6 ± 15.0	NS
N	*Orthotrichum anomalum*	Anomalous Bristle Moss				S2?	1	97.5 ± 0.0	NS
N	*Physcomitrium collenchymatum*	a Moss				S2?	6	64.9 ± 2.0	NS
N	*Rauiella scita*	Smaller Fern Moss				S2?	15	90.9 ± 0.0	NS
N	*Platylomella lescurii*	a Moss				S2?	4	97.4 ± 0.0	NS
N	*Oxyrrhynchium hians*	Light Beaked Moss				S2S3	1	95.0 ± 5.0	NS
N	*Plagiomnium rostratum*	Long-beaked Leafy Moss				S2S3	3	95.3 ± 0.0	NS
N	*Moelleropsis nebulosa*	Blue-gray Moss Shingle Lichen				S2S3	148	20.5 ± 0.0	NS
N	*Moelleropsis nebulosa ssp. frullaniae*	Blue-gray Moss Shingle Lichen				S2S3	8	42.2 ± 0.0	NS
N	*Ramalina thrausta*	Angelhair Ramalina Lichen				S2S3	1	27.7 ± 2.0	NS
N	*Collema leptaleum*	Crumpled Bat's Wing Lichen				S2S3	10	55.4 ± 0.0	NS
N	*Usnea ceratina*	Warty Beard Lichen				S2S3	2	45.0 ± 3.0	NS
N	*Usnea rubicunda*	Red Beard Lichen				S2S3	7	14.3 ± 0.0	NS
N	*Ahtiana aurescens*	Eastern Candlewax Lichen				S2S3	4	54.8 ± 0.0	NS
N	*Usnocetraria oakesiana*	Yellow Band Lichen				S2S3	2	43.1 ± 0.0	NS
N	*Cladonia incrassata*	Powder-foot British Soldiers Lichen				S2S3	3	21.8 ± 1.0	NS
N	*Cladonia mateocyatha*	Mixed-up Pixie-cup				S2S3	1	36.0 ± 0.0	NS
N	*Cladonia parasitica*	Fence-rail Lichen				S2S3	1	89.6 ± 1.0	NS
N	*Scytinium tenuissimum*	Birdnest Jellyskin Lichen				S2S3	3	82.6 ± 0.0	NS
N	*Hypotrachyna minarum*	Hairless-spined Shield Lichen				S2S3	3	28.7 ± 0.0	NS
N	*Usnea cavernosa*	Pitted Beard Lichen				S2S3	2	89.0 ± 0.0	NS
N	*Fuscopannaria sorediata*	a Lichen				S2S3	17	38.2 ± 0.0	NS
N	*Hypotrachyna revoluta*	Granulating Loop Lichen				S2S3	18	19.3 ± 2.0	NS
N	*Cetraria arenaria*	Sand-loving Icelandmoss Lichen				S2S3	1	56.7 ± 1.0	NS

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N	*Cladonia coccifera*	Eastern Boreal Pixie-cup Lichen				S2S3	1	62.9 ± 0.0	NS
N	*Cladonia phyllophora*	Felt Lichen				S2S3	1	72.5 ± 0.0	NS
N	*Hypotrachyna afrorevoluta*	Pustulate Revolute Loop Lichen				S2S3	4	67.7 ± 0.0	NS
N	*Usnea flammea*	Coastal Bushy Beard Lichen				S2S3	2	94.9 ± 0.0	NS
N	*Microlejeunea ulicina*	a pouncewort				S3	6	39.1 ± 0.0	NS
N	*Anomodon tristis*	a Moss				S3	6	39.1 ± 0.0	NS
N	*Tetraplodon angustatus*	Toothed-leaved Nitrogen Moss				S3	1	83.4 ± 0.0	NS
N	*Collema nigrescens*	Blistered Tarpaper Lichen				S3	57	30.6 ± 0.0	NS
N	*Fuscopannaria ahlneri*	Corrugated Shingles Lichen				S3	86	20.0 ± 0.0	NS
N	*Heterodermia squamulosa*	Scaly Fringe Lichen				S3	23	20.0 ± 0.0	NS
N	*Scytinium lichenoides*	Tattered Jellyskin Lichen				S3	6	77.9 ± 0.0	NS
N	*Leptogium milligranum*	Stretched Jellyskin Lichen				S3	42	13.4 ± 0.0	NS
N	*Nephroma bellum*	Naked Kidney Lichen				S3	10	27.7 ± 2.0	NS
N	*Punctelia appalachensis*	Appalachian Speckleback Lichen				S3	14	21.6 ± 0.0	NS
N	*Viridothelium virens*					S3	7	20.5 ± 0.0	NS
N	*Peltigera collina*	Tree Pelt Lichen				S3	6	91.7 ± 0.0	NS
N	*Drummondia prorepens*	a Moss				S3?	1	95.3 ± 0.0	NS
N	*Cladonia stygia*	Black-footed Reindeer Lichen				S3?	2	53.4 ± 0.0	NS
N	*Anomodon rugelii*	Rugel's Anomodon Moss				S3S4	6	38.3 ± 1.0	NS
N	*Dichelyma capillaceum*	Hairlike Dichelyma Moss				S3S4	6	96.5 ± 0.0	NS
N	*Dicranum leioneuron*	a Dicranum Moss				S3S4	2	95.0 ± 0.0	NS
N	*Hylocomiastrum pyrenaicum*	a Feather Moss				S3S4	1	95.3 ± 0.0	NS
N	*Sticta fuliginosa*	Peppered Moon Lichen				S3S4	259	13.7 ± 0.0	NS
N	*Arctoparmelia incurva*	Finger Ring Lichen				S3S4	3	53.4 ± 0.0	NS
N	*Scytinium teretiusculum*	Curly Jellyskin Lichen				S3S4	6	49.9 ± 0.0	NS
N	*Leptogium acadiense*	Acadian Jellyskin Lichen				S3S4	29	51.3 ± 0.0	NS
N	*Scytinium subtile*	Appressed Jellyskin Lichen				S3S4	17	28.2 ± 0.0	NS
N	*Heterodermia speciosa*	Powdered Fringe Lichen				S3S4	33	27.7 ± 2.0	NS
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S3S4	295	22.9 ± 0.0	NS
N	*Melanohalea olivacea*	Spotted Camouflage Lichen				S3S4	2	97.2 ± 7.0	NS
N	*Parmotrema perlatum*	Powdered Ruffle Lichen				S3S4	50	12.7 ± 0.0	NS
N	*Peltigera hymenina*	Cloudy Pelt Lichen				S3S4	1	35.8 ± 2.0	NS
N	*Sphaerophorus fragilis*	Fragile Coral Lichen				S3S4	2	56.0 ± 0.0	NS
N	*Coccocarpia palmicola*	Salted Shell Lichen				S3S4	921	15.4 ± 0.0	NS
N	*Physcia caesia*	Blue-gray Rosette Lichen				S3S4	1	77.7 ± 20.0	NS
N	*Physcia tenella*	Fringed Rosette Lichen				S3S4	1	95.7 ± 1.0	NS
N	*Anaptychia palmulata*	Shaggy Fringed Lichen				S3S4	81	20.0 ± 0.0	NS
N	*Heterodermia neglecta*	Fringe Lichen				S3S4	233	13.1 ± 0.0	NS
P	*Geum peckii*	Eastern Mountain Avens	Endangered	Endangered	Endangered	S1	3199	62.5 ± 0.0	NS
P	*Rhynchospora macrostachya*	Tall Beakrush	Endangered	Endangered	Endangered	S1	50	96.8 ± 0.0	NS
P	*Lyonia ligustrina*	Maleberry	Endangered			S1	11	22.9 ± 0.0	NS
P	*Coreopsis rosea*	Pink Coreopsis	Endangered	Endangered	Endangered	S2	468	13.4 ± 0.0	NS
P	*Drosera filiformis*	Thread-leaved Sundew	Endangered	Endangered	Endangered	S2	919	43.8 ± 0.0	NS
P	*Clethra alnifolia*	Coast Pepper-Bush	Endangered	Threatened	Vulnerable	S2	127	19.5 ± 0.0	NS
P	*Sabatia kennedyana*	Plymouth Gentian	Endangered	Endangered	Endangered	S2S3	1266	16.5 ± 1.0	NS
P	*Fraxinus nigra*	Black Ash	Threatened		Threatened	S1S2	15	58.9 ± 0.0	NS
P	*Baccharis halimifolia*	Eastern Baccharis	Threatened	Threatened	Threatened	S2	174	6.9 ± 0.0	NS
P	*Hydrocotyle umbellata*	Water Pennywort	Special Concern	Special Concern	Endangered	S2	205	21.7 ± 0.0	NS
P	*Eleocharis tuberculosa*	Tubercled Spike-rush	Special Concern	Special Concern	Vulnerable	S2	516	23.3 ± 0.0	NS
P	*Lophiola aurea*	Goldencrest	Special Concern	Special Concern	Vulnerable	S2	65	63.8 ± 1.0	NS
P	*Lilaeopsis chinensis*	Eastern Lilaeopsis	Special Concern	Special Concern	Vulnerable	S3	36	13.2 ± 0.0	NS
P	*Scirpus longii*	Long's Bulrush	Special Concern		Vulnerable	S3	300	24.3 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Isoetes prototypus*	Prototype Quillwort	Special Concern	Special Concern	Vulnerable	S3	2	83.1 ± 0.0	NS
P	*Toxicodendron vernix*	Poison Sumac				S1	10	98.2 ± 0.0	NS
P	*Nabalus racemosus*	Glaucous Rattlesnakeroot				S1	10	79.4 ± 0.0	NS
P	*Lobelia spicata*	Pale-Spiked Lobelia				S1	1	39.5 ± 50.0	NS
P	*Montia fontana*	Water Blinks				S1	3	67.0 ± 0.0	NS
P	*Lysimachia minima*	Chaffweed				S1	1	98.6 ± 0.0	NS
P	*Amelanchier nantucketensis*	Nantucket Serviceberry				S1	1	64.0 ± 0.0	NS
P	*Veronica catenata*	Pink Water-Speedwell				S1	1	78.8 ± 0.0	NS
P	*Carex digitalis*	Slender Wood Sedge				S1	2	96.7 ± 0.0	NS
P	*Carex laxiflora*	Loose-Flowered Sedge				S1	2	91.5 ± 10.0	NS
P	*Carex prairea*	Prairie Sedge				S1	1	90.7 ± 5.0	NS
P	*Carex viridula var. saxilittoralis*	Greenish Sedge				S1	2	62.6 ± 5.0	NS
P	*Cyperus diandrus*	Low Flatsedge				S1	7	20.9 ± 0.0	NS
P	*Fimbristylis autumnalis*	Slender Fimbry				S1	3	93.4 ± 0.0	NS
P	*Rhynchospora capillacea*	Slender Beakrush				S1	1	23.1 ± 0.0	NS
P	*Blysmopsis rufa*	Red Bulrush				S1	1	12.3 ± 1.0	NS
P	*Sisyrinchium fuscatum*	Coastal Plain Blue-eyed-grass				S1	4	21.1 ± 0.0	NS
P	*Juncus brachycephalus*	Small-Head Rush				S1	2	35.5 ± 2.0	NS
P	*Juncus secundus*	Secund Rush				S1	1	99.0 ± 3.0	NS
P	*Spiranthes casei var. casei*	Case's Ladies'-Tresses				S1	1	62.6 ± 5.0	NS
P	*Adiantum pedatum*	Northern Maidenhair Fern				S1	2	22.4 ± 0.0	NS
P	*Selaginella rupestris*	Rock Spikemoss				S1	29	85.3 ± 0.0	NS
P	*Solidago hispida*	Hairy Goldenrod				S1?	3	8.6 ± 7.0	NS
P	*Bolboschoenus robustus*	Sturdy Bulrush				S1?	1	18.7 ± 7.0	NS
P	*Allium schoenoprasum*	Wild Chives				S1?	1	67.0 ± 1.0	NS
P	*Allium schoenoprasum var. sibiricum*	Wild Chives				S1?	2	66.5 ± 0.0	NS
P	*Panicum dichotomiflorum ssp. puritanorum*	Spreading Panicgrass				S1?	17	19.4 ± 1.0	NS
P	*Huperzia selago*	Northern Firmoss				S1?	3	62.6 ± 5.0	NS
P	*Cornus suecica*	Swedish Bunchberry				S1S2	2	96.1 ± 0.0	NS
P	*Proserpinaca intermedia*	Intermediate Mermaidweed				S1S2	2	20.1 ± 1.0	NS
P	*Calamagrostis stricta ssp. stricta*	Slim-stemmed Reed Grass				S1S2	1	31.6 ± 0.0	NS
P	*Selaginella selaginoides*	Low Spikemoss				S1S2	2	64.5 ± 2.0	NS
P	*Carex vacillans*	Estuarine Sedge				S1S3	1	98.0 ± 0.0	NS
P	*Hudsonia ericoides*	Pinebarren Golden Heather				S2	17	43.5 ± 0.0	NS
P	*Desmodium canadense*	Canada Tick-trefoil				S2	7	68.3 ± 7.0	NS
P	*Hylodesmum glutinosum*	Large Tick-trefoil				S2	4	97.5 ± 0.0	NS
P	*Conopholis americana*	American Cancer-root				S2	33	91.5 ± 0.0	NS
P	*Ranunculus sceleratus*	Cursed Buttercup				S2	1	80.9 ± 0.0	NS
P	*Agalinis maritima*	Saltmarsh Agalinis				S2	51	2.7 ± 0.0	NS
P	*Juncus greenei*	Greene's Rush				S2	6	43.6 ± 0.0	NS
P	*Juncus alpinoarticulatus ssp. americanus*	Northern Green Rush				S2	1	39.5 ± 0.0	NS
P	*Allium tricoccum*	Wild Leek				S2	1	88.0 ± 0.0	NS
P	*Platanthera flava var. flava*	Southern Rein Orchid				S2	400	8.8 ± 7.0	NS
P	*Platanthera flava var. herbiola*	Pale Green Orchid				S2	1	25.4 ± 0.0	NS
P	*Platanthera macrophylla*	Large Round-Leaved Orchid				S2	1	39.2 ± 1.0	NS
P	*Piptatheropsis pungens*	Slender Ricegrass				S2	2	53.5 ± 10.0	NS
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S2?	6	13.3 ± 0.0	NS
P	*Rumex persicarioides*	Peach-leaved Dock				S2?	6	63.0 ± 0.0	NS
P	*Thuja occidentalis*	Eastern White Cedar			Vulnerable	S2S3	233	22.9 ± 0.0	NS
P	*Erigeron philadelphicus*	Philadelphia Fleabane				S2S3	1	40.3 ± 1.0	NS
P	*Eutrochium dubium*	Coastal Plain Joe Pye Weed				S2S3	185	9.6 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Lactuca hirsuta*	Hairy Lettuce				S2S3	4	16.4 ± 0.0	NS
P	*Oxybasis rubra*	Red Goosefoot				S2S3	3	80.9 ± 0.0	NS
P	*Hypericum majus*	Large St John's-wort				S2S3	1	84.7 ± 1.0	NS
P	*Hypericum x dissimulatum*	Disguised St. John's-wort				S2S3	7	15.4 ± 10.0	NS
P	*Euphorbia polygonifolia*	Seaside Spurge				S2S3	10	37.4 ± 0.0	NS
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S2S3	8	40.6 ± 0.0	NS
P	*Hedeoma pulegioides*	American False Pennyroyal				S2S3	42	29.9 ± 5.0	NS
P	*Oenothera fruticosa ssp. tetragona*	Narrow-leaved Evening Primrose				S2S3	24	28.6 ± 7.0	NS
P	*Polygala polygama*	Racemed Milkwort				S2S3	9	62.8 ± 0.0	NS
P	*Polygonum aviculare ssp. buxiforme*	Box Knotweed				S2S3	1	62.6 ± 7.0	NS
P	*Polygonum oxyspermum ssp. raii*	Ray's Knotweed				S2S3	12	27.4 ± 1.0	NS
P	*Amelanchier fernaldii*	Fernald's Serviceberry				S2S3	1	64.0 ± 1.0	NS
P	*Potentilla canadensis*	Canada Cinquefoil				S2S3	11	19.5 ± 1.0	NS
P	*Galium obtusum*	Blunt-leaved Bedstraw				S2S3	20	15.6 ± 0.0	NS
P	*Carex adusta*	Lesser Brown Sedge				S2S3	1	82.4 ± 7.0	NS
P	*Carex houghtoniana*	Houghton's Sedge				S2S3	3	69.7 ± 0.0	NS
P	*Carex hystericina*	Porcupine Sedge				S2S3	1	21.8 ± 1.0	NS
P	*Carex longii*	Long's Sedge				S2S3	16	13.5 ± 0.0	NS
P	*Eleocharis ovata*	Ovate Spikerush				S2S3	5	16.3 ± 0.0	NS
P	*Scirpus pedicellatus*	Stalked Bulrush				S2S3	1	75.4 ± 5.0	NS
P	*Vallisneria americana*	Wild Celery				S2S3	3	97.0 ± 0.0	NS
P	*Najas gracillima*	Thread-Like Naiad				S2S3	15	96.4 ± 0.0	NS
P	*Goodyera pubescens*	Downy Rattlesnake-Plantain				S2S3	28	67.8 ± 0.0	NS
P	*Spiranthes casei*	Case's Ladies'-Tresses				S2S3	3	44.5 ± 0.0	NS
P	*Spiranthes casei var. novaescotiae*	Case's Ladies'-Tresses				S2S3	19	15.8 ± 1.0	NS
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2S3	4	28.0 ± 7.0	NS
P	*Botrychium lanceolatum ssp. angustisegmentum*	Narrow Triangle Moonwort				S2S3	3	35.5 ± 1.0	NS
P	*Botrychium simplex*	Least Moonwort				S2S3	1	33.3 ± 1.0	NS
P	*Ophioglossum pusillum*	Northern Adder's-tongue				S2S3	9	8.8 ± 7.0	NS
P	*Potamogeton pulcher*	Spotted Pondweed			Vulnerable	S3	35	15.6 ± 0.0	NS
P	*Conioselinum chinense*	Chinese Hemlock-parsley				S3	10	64.9 ± 0.0	NS
P	*Hieracium robinsonii*	Robinson's Hawkweed				S3	3	8.5 ± 1.0	NS
P	*Iva frutescens*	Big-leaved Marsh-elder				S3	59	3.4 ± 0.0	NS
P	*Senecio pseudoarnica*	Seabeach Ragwort				S3	4	12.3 ± 1.0	NS
P	*Symphyotrichum boreale*	Boreal Aster				S3	13	20.1 ± 1.0	NS
P	*Symphyotrichum undulatum*	Wavy-leaved Aster				S3	4	61.6 ± 7.0	NS
P	*Symphyotrichum ciliolatum*	Fringed Blue Aster				S3	1	95.8 ± 0.0	NS
P	*Alnus serrulata*	Smooth Alder				S3	201	14.0 ± 0.0	NS
P	*Betula michauxii*	Michaux's Dwarf Birch				S3	13	62.6 ± 5.0	NS
P	*Cardamine parviflora*	Small-flowered Bittercress				S3	1	64.8 ± 5.0	NS
P	*Mononeuria groenlandica*	Greenland Stitchwort				S3	4	66.8 ± 0.0	NS
P	*Sagina nodosa*	Knotted Pearlwort				S3	35	43.8 ± 1.0	NS
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S3	3	44.8 ± 1.0	NS
P	*Stellaria longifolia*	Long-leaved Starwort				S3	1	56.3 ± 5.0	NS
P	*Ceratophyllum echinatum*	Prickly Hornwort				S3	1	18.6 ± 0.0	NS
P	*Crassula aquatica*	Water Pygmyweed				S3	2	46.1 ± 0.0	NS
P	*Vaccinium uliginosum*	Alpine Bilberry				S3	3	63.8 ± 0.0	NS
P	*Geranium bicknellii*	Bicknell's Crane's-bill				S3	5	28.1 ± 0.0	NS
P	*Utricularia resupinata*	Inverted Bladderwort				S3	31	23.3 ± 0.0	NS
P	*Persicaria arifolia*	Halberd-leaved Tearthumb				S3	1	21.6 ± 0.0	NS
P	*Primula laurentiana*	Laurentian Primrose				S3	15	2.5 ± 7.0	NS
P	*Samolus parviflorus*	Seaside Brookweed				S3	26	8.1 ± 7.0	NS
P	*Pyrola minor*	Lesser Pyrola				S3	1	98.1 ± 1.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Cephalanthus occidentalis*	Common Buttonbush				S3	436	33.8 ± 7.0	NS
P	*Salix sericea*	Silky Willow				S3	47	17.5 ± 0.0	NS
P	*Lindernia dubia*	Yellow-seeded False Pimperel				S3	4	8.8 ± 0.0	NS
P	*Pilea pumila*	Dwarf Clearweed				S3	1	54.8 ± 0.0	NS
P	*Viola nephrophylla*	Northern Bog Violet				S3	1	71.4 ± 1.0	NS
P	*Carex cryptolepis*	Hidden-scaled Sedge				S3	2	24.4 ± 2.0	NS
P	*Carex lupulina*	Hop Sedge				S3	23	16.7 ± 1.0	NS
P	*Carex swanii*	Swan's Sedge				S3	68	8.6 ± 1.0	NS
P	*Carex tenera*	Tender Sedge				S3	2	49.5 ± 0.0	NS
P	*Carex tribuloides*	Blunt Broom Sedge				S3	1	96.5 ± 0.0	NS
P	*Eleocharis nitida*	Quill Spikerush				S3	1	83.4 ± 7.0	NS
P	*Eleocharis flavescens var. olivacea*	Bright-green Spikerush				S3	12	13.5 ± 0.0	NS
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S3	2	65.2 ± 3.0	NS
P	*Eleocharis rostellata*	Beaked Spikerush				S3	73	2.4 ± 0.0	NS
P	*Schoenoplectus americanus*	Olney's Bulrush				S3	98	1.8 ± 0.0	NS
P	*Neottia bifolia*	Southern Twayblade				S3	93	1.8 ± 0.0	NS
P	*Platanthera flava*	Southern Rein-Orchid				S3	18	17.7 ± 9.0	NS
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	4	12.4 ± 5.0	NS
P	*Platanthera hookeri*	Hooker's Orchid				S3	6	39.3 ± 0.0	NS
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S3	1	57.0 ± 0.0	NS
P	*Piptatheropsis canadensis*	Canada Ricegrass				S3	12	18.0 ± 0.0	NS
P	*Sceptridium dissectum*	Dissected Moonwort				S3	8	14.0 ± 0.0	NS
P	*Persicaria amphibia var. emersa*	Long-root Smartweed				S3?	5	17.1 ± 0.0	NS
P	*Spiranthes ochroleuca*	Yellow Ladies'-tresses				S3?	22	9.9 ± 0.0	NS
P	*Diphasiastrum x sabinifolium*	Savin-leaved Ground-cedar				S3?	2	97.9 ± 0.0	NS
P	*Bidens vulgata*	Tall Beggarticks				S3S4	1	38.9 ± 0.0	NS
P	*Hieracium paniculatum*	Panicled Hawkweed				S3S4	9	15.8 ± 0.0	NS
P	*Bidens beckii*	Water Beggarticks				S3S4	25	16.5 ± 0.0	NS
P	*Vaccinium corymbosum*	Highbush Blueberry				S3S4	762	0.2 ± 0.0	NS
P	*Fagus grandifolia*	American Beech				S3S4	92	3.4 ± 0.0	NS
P	*Bartonia virginica*	Yellow Bartonia				S3S4	85	11.7 ± 7.0	NS
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S3S4	59	17.7 ± 9.0	NS
P	*Decodon verticillatus*	Swamp Loosestrife				S3S4	302	16.0 ± 0.0	NS
P	*Nuphar microphylla*	Small Yellow Pond-lily				S3S4	4	29.2 ± 0.0	NS
P	*Persicaria pensylvanica*	Pennsylvania Smartweed				S3S4	1	73.4 ± 5.0	NS
P	*Fallopia scandens*	Climbing False Buckwheat				S3S4	2	78.6 ± 7.0	NS
P	*Pyrola asarifolia*	Pink Pyrola				S3S4	1	92.9 ± 7.0	NS
P	*Endotropis alnifolia*	alder-leaved buckthorn				S3S4	1	97.4 ± 0.0	NS
P	*Amelanchier spicata*	Running Serviceberry				S3S4	9	16.2 ± 2.0	NS
P	*Galium aparine*	Common Bedstraw				S3S4	5	35.5 ± 2.0	NS
P	*Limosella australis*	Southern Mudwort				S3S4	13	12.3 ± 5.0	NS
P	*Veronica serpyllifolia*	Thyme-Leaved Speedwell				S3S4	10	21.4 ± 0.0	NS
P	*Ulmus americana*	White Elm				S3S4	1	99.4 ± 0.0	NS
P	*Viola sagittata var. ovata*	Arrow-Leaved Violet				S3S4	22	27.1 ± 0.0	NS
P	*Symplocarpus foetidus*	Eastern Skunk Cabbage				S3S4	465	2.5 ± 7.0	NS
P	*Carex argyrantha*	Silvery-flowered Sedge				S3S4	17	21.3 ± 0.0	NS
P	*Sisyrinchium atlanticum*	Eastern Blue-Eyed-Grass				S3S4	303	13.5 ± 0.0	NS
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	13	8.0 ± 0.0	NS
P	*Juncus acuminatus*	Sharp-Fruit Rush				S3S4	11	8.8 ± 0.0	NS
P	*Juncus subcaudatus*	Woods-Rush				S3S4	26	15.4 ± 5.0	NS
P	*Goodyera repens*	Lesser Rattlesnake-plantain				S3S4	16	10.7 ± 0.0	NS
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	7	16.2 ± 1.0	NS
P	*Platanthera obtusata*	Blunt-leaved Orchid				S3S4	21	8.2 ± 5.0	NS
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3S4	5	39.3 ± 0.0	NS
P	*Dichanthelium clandestinum*	Deer-tongue Panic Grass				S3S4	69	14.4 ± 10.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	# recs	Distance (km)	Prov
P	*Coleataenia longifolia*	Long-leaved Panicgrass				S3S4	1358	11.7 ± 7.0	NS
P	*Panicum philadelphicum*	Philadelphia Panicgrass				S3S4	12	20.9 ± 0.0	NS
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S3S4	1	97.7 ± 1.0	NS
P	*Lorinseria areolata*	Netted Chain Fern				S3S4	334	16.4 ± 0.0	NS
P	*Diphasiastrum complanatum*	Northern Ground-cedar				S3S4	1	23.5 ± 0.0	NS
P	*Sceptridium multifidum*	Leathery Moonwort				S3S4	6	69.7 ± 10.0	NS
P	*Botrychium matricariifolium*	Daisy-leaved Moonwort				S3S4	1	88.4 ± 10.0	NS
P	*Bidens discoidea*	Swamp Beggarticks				SH	1	95.5 ± 0.0	NS
P	*Dichanthelium meridionale*	Matting Witchgrass				SH	2	20.1 ± 5.0	NS

5.1 SOURCE BIBLIOGRAPHY (100 km)

The recipient of these data shall acknowledge the AC CDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

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412	Toms, B. & Hill, N.M.; Neily, T. 2014. Atlantic Coastal Plain Flora records, 2011. Mersey Tobeatic Research Institute, 430 recs.
396	Belliveau, A. 2012. 2012 Atlantic Coastal Plain Flora observations. Mersey Tobeatic Research Institute, 1543.
393	Amirault, D.L. & Stewart, J. 2007. Piping Plover Database 1894-2006. Canadian Wildlife Service, Sackville, 3344 recs, 1228 new.
379	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
372	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2015. Atlantic Canada Conservation Data Centre Fieldwork 2015. Atlantic Canada Conservation Data Centre, # recs.
360	eBird. 2020. eBird Basic Dataset. Version: EBD_relNov-2019. Ithaca, New York. Nov 2019, Cape Breton Bras d'Or Lakes Watershed subset. Cornell Lab of Ornithology.
345	Toms, Brad. 2011. Atlantic Coastal Plain Flora records 2010. Mersey-Tobiatic Research Institute, 1074 recs.
332	Belliveau, A.G. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2016. Atlantic Canada Conservation Data Centre, 10695 recs.
306	Neily, T.H. & Pepper, C.; Toms, B. 2013. Nova Scotia lichen location database. Mersey Tobeatic Research Institute, 1301 records.
302	Phinney, Lori. 2020. Pre- and post White-nose Syndrome bat acoustic monitoring, NS. Mersey Tobeatic Research Institute, 1279 recs.
298	MacDonald, E.C. 2018. Piping Plover nest records from 2010-2017. Canadian Wildlife Service.
294	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2014. Atlantic Canada Conservation Data Centre Fieldwork 2014. Atlantic Canada Conservation Data Centre, # recs.
286	Blaney, C.S.; Mazerolle, D.M.; Belliveau, A.B. 2013. Atlantic Canada Conservation Data Centre Fieldwork 2013. Atlantic Canada Conservation Data Centre, 9000+ recs.
273	Hicks, Andrew. 2009. Coastal Waterfowl Surveys Database, 2000-08. Canadian Wildlife Service, Sackville, 46488 recs (11149 non-zero).
247	Smith, D. 2013. Personal communication concerning Anguilla rostrata trapping results in Kejimkujik NP, NS. Winter 2013. Pers. comm.
245	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.
244	Newell, R.E. 2005. E.C. Smith Digital Herbarium. E.C. Smith Herbarium, Irving Biodiversity Collection, Acadia University, Web site: http://luxor.acadiau.ca/library/Herbarium/project/. 582 recs.
243	Benjamin, L.K. (compiler). 2012. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 4965 recs.

# recs	CITATION
237	Neily, T.H. & Pepper, C.; Toms, B. 2020. Nova Scotia lichen database [as of 2020-03-18]. Mersey Tobeatic Research Institute.
225	Hill, N.M. 1994. Status report on the Long's bulrush Scirpus longii in Canada. Committee on the Status of Endangered Wildlife in Canada, 7 recs.
220	Toms, Brad. 2012. Atlantic Coastal Plain Flora records, 2011. Mersey-Tobiatic Research Institute, 1109 recs.
201	Blaney, C.S. & Mazerolle, D.M. 2011. 2011 botanical surveys in Kejimkujik National Park. Atlantic Canada Conservation Data Centre, 820 recs.
199	Mazerolle, D.M. 2016. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
197	Neily, T.H. & Pepper, C.; Toms, B. 2015. Nova Scotia lichen location database [as of 2015-02-15]. Mersey Tobeatic Research Institute, 1691 records.
179	Pronych, G. & Wilson, A. 1993. Atlas of Rare Vascular Plants in Nova Scotia. Nova Scotia Museum, Halifax NS, I:1-168, II:169-331. 1446 recs.
176	Amirault, D.L. & McKnight, J. 2003. Piping Plover Database 1991-2003. Canadian Wildlife Service, Sackville, unpublished data. 7 recs.
176	Chapman, C.J. 2019. Atlantic Canada Conservation Data Centre 2019 botanical fieldwork. Atlantic Canada Conservation Data Centre, 11729 recs.
166	Scott, F.W. 2002. Nova Scotia Herpetofauna Atlas Database. Acadia University, Wolfville NS, 8856 recs.
164	Belliveau, A.G. 2018. E.C. Smith Herbarium and Atlantic Canada Conservation Data Centre Fieldwork 2018. E.C. Smith Herbarium, 6226 recs.
162	Toms, B. & Neily, T.; Belliveau, A.G.; Newell, R.; Mills, A.; Clapp, H.; Staicer, C.; Anderson, F.; Gray, C.; Beals, L. 2010. Inventory of Nature Conservancy of Canada Lands in Yarmouth and Shelburne Counties. Mersey Tobeatic Research Institute, approx. 1500 recs.
141	Wilhelm, S.I. et al. 2011. Colonial Waterbird Database. Canadian Wildlife Service, Sackville, 2698 sites, 9718 recs (8192 obs).
135	Belliveau, A.G. 2014. Plant Records from Southern and Central Nova Scotia. Atlantic Canada Conservation Data Centre, 919 recs.
135	MacDonald, E.C. 2018. CWS Piping Plover Census, 2010-2017. Canadian Wildlife Service, 672 recs.
134	Blaney, C.S. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2018. Atlantic Canada Conservation Data Centre.
130	Belliveau, A.G. 2018. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
126	McNeil, J.A. 2011. Ribbonsnake (Thamophis sauritus) sightings, 2010. Parks Canada, 148 recs of 70+ individuals.
122	Cameron, R.P. 2011. Lichen observations, 2011. Nova Scotia Environment & Labour, 731 recs.
120	Neily, T.H. & Pepper, C.; Toms, B. 2018. Nova Scotia lichen database [as of 2018-03]. Mersey Tobeatic Research Institute.
118	MacKinnon, D.S. & O'Brien, M.K.H.; Cameron, R.P. 2002. Fieldwork 2000. Dept of Environment & Labour, Protected Areas Branch, 252 recs.
114	Benjamin, L.K. 2009. NSDNR Fieldwork & Consultants Reports. Nova Scotia Dept Natural Resources, 143 recs.
107	MacKinnon, D.S. 2005. Coastal Plains Flora GIS theme, 1999-2000. Dept of Environment & Labour, Protected Areas Branch, 109 shp files. 109 recs.
105	Bayne, D.Z. 2013. 2013 Plant observations from southwest Nova Scotia. Nova Scotia Department of Natural Resources, 122 recs.
102	Haughian, S.R. 2018. Description of Fuscopannaria leucosticta field work in 2017. New Brunswick Museum, 314 recs.
101	Westwood, A., Staicer, C. 2016. Nova Scotia landbird Species at Risk observations. Dalhousie University.
96	Riley, J. 2020. Digby County lichen observations. Pers. comm. to J.L. Churchill.
95	Belland, R.J. Maritimes moss records from various herbarium databases. 2014.
93	Blaney, C.S.; Mazerolle, D.M. 2011. Fieldwork 2011. Atlantic Canada Conservation Data Centre. Sackville NB.
93	Newell, R. & Neily, T.; Toms, B.; Proulx, G. et al. 2011. NCC Properties Fieldwork in NS: August-September 2010. Nature Conservancy Canada, 106 recs.
90	Benjamin, L.K. 2012. NSDNR fieldwork & consultant reports 2008-2012. Nova Scotia Dept Natural Resources, 196 recs.
89	Blaney, C.S.; Mazerolle, D.M. 2009. Fieldwork 2009. Atlantic Canada Conservation Data Centre. Sackville NB, 13395 recs.
83	Robinson, S.L. 2014. 2013 Field Data. Atlantic Canada Conservation Data Centre.
83	Wilhelm, S.I. et al. 2019. Colonial Waterbird Database. Canadian Wildlife Service.
82	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2013.
82	Riley, J. 2019. Digby County lichen observations. Pers. comm. to J.L. Churchill, 50 recs.
81	McMullin, R.T.; Anderson, F.; Clapp, H.; et al. 2019. Results from a rare lichen survey at Kejimkujik Seaside National Park in Nova Scotia, Canada. Canadian Museum of Nature, 83 recs.
76	iNaturalist. 2018. iNaturalist Data Export 2018. iNaturalist.org and iNaturalist.ca, Web site: 11700 recs.
67	Benjamin, L.K. 2009. Boreal Felt Lichen, Mountain Avens, Orchid and other recent records. Nova Scotia Dept Natural Resources, 105 recs.
67	Canadian Wildlife Service, Dartmouth. 2010. Piping Plover censuses 2007-09, 304 recs.
67	Parks Canada. 2021. Species at Risk observations from 2019-2020 in Kejimkujik National Park and Historic Site. Parks Canada, 76 records.
65	Toms, B. 2018. Bat Species data from www.batconservation.ca for Nova Scotia. Mersey Tobeatic Research Institute, 547 Records.
64	Benjamin, L.K. (compiler). 2001. Significant Habitat & Species Database. Nova Scotia Dept of Natural Resources, 15 spp, 224 recs.
63	Blaney, C.S.; Mazerolle, D.M.; Klymko, J; Spicer, C.D. 2006. Fieldwork 2006. Atlantic Canada Conservation Data Centre. Sackville NB, 8399 recs.
62	Roland, A.E. 1976. The Coastal Plain Flora of Kejimkujik National Park. Parks Canada Report, 238 pp.
57	Belliveau, A. 2013. Rare species records from Nova Scotia. Mersey Tobeatic Research Institute, 296 records. 296 recs.
56	Blaney, C.S.; Spicer, C.D.; Mazerolle, D.M. 2005. Fieldwork 2005. Atlantic Canada Conservation Data Centre. Sackville NB, 2333 recs.
54	Herman, T.B. & Power, T.D., Eaton, B. 1995. Population status of Blanding's Turtle (Emydoidea blandingii) in Nova Scotia. Can. Field-Nat., 109: 182-191. 79 recs.
54	Munro, Marian K. Tracked lichen specimens, Nova Scotia Provincial Museum of Natural History Herbarium. Atlantic Canada Conservation Data Centre. 2019.
52	Churchill, J.L. 2019. Atlantic Canada Conservation Data Centre Fieldwork 2019. Atlantic Canada Conservation Data Centre.
51	Brazner, J. 2016. Nova Scotia Forested Wetland Bird Surveys. Nova Scotia Department of Lands and Forestry.
50	Blaney, C.S.; Spicer, C.D. 2001. Fieldwork 2001. Atlantic Canada Conservation Data Centre. Sackville NB, 981 recs.
50	McNeil, J.A. 2013. Ribbonsnake (Thamnophis sauritus) sightings, 2012 . Parks Canada, 63 records of 26+ individuals.
50	Roland, A.E. & Smith, E.C. 1969. The Flora of Nova Scotia, 1st Ed. Nova Scotia Museum, Halifax, 743pp.
48	Blaney, C.S.; Spicer, C.D.; Rothfels, C. 2004. Fieldwork 2004. Atlantic Canada Conservation Data Centre. Sackville NB, 1343 recs.
48	Richardson, D., Anderson, F., Cameron, R, McMullin, T., Clayden, S. 2014. Field Work Report on Black Foam Lichen (Anzia colpodes). COSEWIC.
43	Klymko, J.J.D.; Robinson, S.L. 2014. 2013 field data. Atlantic Canada Conservation Data Centre.
42	Staicer, C. & Bliss, S.; Achenbach, L. 2017. Occurrences of tracked breeding birds in forested wetlands. , 303 records.

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41	Klymko, J. 2018. Maritimes Butterfly Atlas database. Atlantic Canada Conservation Data Centre.
41	MacKinnon, D.S. & Maass, O.C. 1995. Fieldwork 1995. Dept Natural Resources, Parks Division, 45 recs.
41	MacKinnon, D.S. 1999. Fieldwork 1999. Dept of Environment and Labour, Protected Areas Branch, 48 recs.
39	Blaney, C.S. 2019. Sean Blaney 2019 field data. Atlantic Canada Conservation Data Centre, 4407 records.
38	Chapman, C.J. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 11171 recs.
38	eBird. 2014. eBird Basic Dataset. Version: EBD_relNov-2014. Ithaca, New York. Nov 2014. Cornell Lab of Ornithology, 25036 recs.
37	Nussey, Pat & NCC staff. 2019. AEI tracked species records, 2016-2019. Chapman, C.J. (ed.) Atlantic Canada Conservation Data Centre, 333.
36	Blaney, C.S.; Mazerolle, D.M.; Hill, N.M. 2011. Fieldwork for Sabatia kennedyana & Coreopsis rosea COSEWIC status reports.
36	McNeil, J.A. 2020. Snapping Turtle and Eastern Painted Turtle records, 2020. Mersey Tobeatic Research Institute.
35	Blaney, C.S. 2017. Atlantic Canada Conservation Data Centre Fieldwork 2017. Atlantic Canada Conservation Data Centre.
34	Bayne, D.Z. 2014. 2014 rare species observations from southwest Nova Scotia. Nova Scotia Department of Natural Resources, 46 recs.
34	Patrick, A.; Horne, D.; Noseworthy, J. et. al. 2017. Field data for Nova Scotia and New Brunswick, 2015 and 2017. Nature Conservancy of Canada.
34	Roland, A.E. 1980. Checklist of Vascular Plants of Kejimkujik National Park in Lichens, Liverworts, Mosses and Flowering Plants of Kejimkujik National Park. Roland, A.E. (ed.) Parks Canada Report, pp. 52-140, 160 pp.
33	Taylor, P.D. 2006. Long-term monitoring of Listera australis in southwestern Nova Scotia; summary report for 2006, year 3. Acadia University, 33.
32	Brunelle, P.-M. (compiler). 2009. ADIP/MDDS Odonata Database: data to 2006 inclusive. Atlantic Dragonfly Inventory Program (ADIP), 24200 recs.
32	Newell, R.E. 2000. Eleocharis tuberculosa records in NS, 1994-99. Acadia University, Wolfville NS, Pers. comm. to S.H. Gerriets, Feb. 11. 32 recs.
31	MacKinnon, D.S. 2001. Fieldwork 2001. Dept of Environment & Labour, Protected Areas Branch, 43 recs.
31	Mazerolle, D.M. 2018. Atlantic Canada Conservation Data Centre botanical fieldwork 2018. Atlantic Canada Conservation Data Centre, 13515 recs.
29	Nature Conservancy Canada. 2008. Geum peckii on Brier Island. Nature Conservancy Canada, 29 recs.
27	LaPaix, R.W.; Crowell, M.J.; MacDonald, M. 2011. Stantec rare plant records, 2010-11. Stantec Consulting, 334 recs.
26	Bryson, I. 2020. Nova Scotia and Newfoundland rare species observations, 2018-2020. Nova Scotia Environment.
25	Burnie, B. 2013. 2013 Scirpus longii field data. Mount Saint Vincent University, 51 recs.
25	Paquet, Julie. 2019. Atlantic Canada Shorebird Survey ACSS database for 2019. Environment Canada, Canadian Wildlife Service.
25	Zinck, M. & Roland, A.E. 1998. Roland's Flora of Nova Scotia. Nova Scotia Museum, 3rd ed., rev. M. Zinck; 2 Vol., 1297 pp.
24	Bayne, D.M., Cameron, R.C. 2014. 2014 Lichen records near Little Bon Mature Lake, Queens NS. NS Department of Natural Resources.
24	Broders, H.G. 2006. Unpublished data. , 24 recs.
24	iNaturalist. 2020. iNaturalist butterfly records selected for the Maritimes Butterfly Atlas. iNaturalist.
23	Phinney, L. 2019. Little Brown Myotis maternal colony counts and birdSAR, 2019. Mersey Tobeatic Research Institute.
21	Benjamin, L.K. (compiler). 2010. Baccharis halimifolia observation records. NS Dept of Natural Resources, 40.
20	O'Grady, Sally. 2010. Water Pennywort in Kejimkujik National Park, 2010. Parks Canada, 20 shapefiles.
19	Benjamin, L.K. 2011. NSDNR fieldwork & consultant reports 1997, 2009-10. Nova Scotia Dept Natural Resources, 85 recs.
18	Cameron, R.P. 2017. 2017 rare species field data. Nova Scotia Environment, 64 recs.
17	MacKinnon, D.S. 2000. Fieldwork 2000. Dept of Environment and Labour, Protected Areas Branch, 17 recs.
16	LaPaix, R.W.; Crowell, M.J.; MacDonald, M.; Neily, T.D.; Quinn, G. 2017. Stantec Nova Scotia rare plant records, 2012-2016. Stantec Consulting.
16	Neily, T.H. Hectanooga, Nova Scotia Liverwort records. T.H. Neily. 2017.
16	Richardson, Leif. 2018. Maritimes Bombus records from various sources. Richardson, Leif.
15	Catling, P.M. 1981. Taxonomy of autumn-flowering Spiranthes species of southern Nova Scotia in Can. J. Bot. , 59:1250-1273. 30 recs.
15	McLean, K. 2020. Species occurrence records from Clean Annapolis River Project fieldwork in 2020. Clean Annapolis River Project, 206 records.
15	Neily, T.H. Tom Neily NS Sphagnum records (2009-2014). T.H. Neily, Atlantic Canada Conservation Data Centre. 2019.
15	Oldham, M.J. 2000. Oldham database records from Maritime provinces. Oldham, M.J; ONHIC, 487 recs.
14	McNeil, J.A. 2014. Blandings Turtle (Emydoidea blandingii) and Snapping Turtle (Chelydra serpentina) sightings, 2014. Mersey Tobeatic Research Institute.
14	McNeil, J.A. 2015. Blandings Turtle (Emydoidea blandingii), Eastern Ribbonsnake (Thamnophis sauritus), and Snapping Turtle (Chelydra serpentina) sightings, 2015. Mersey Tobeatic Research Institute.
14	McNeil, J.A. 2017. Updates to Blanding's Turtle database, 1984-2014. Mersey Tobeatic Research Institute.
14	NatureServe Canada. 2019. iNaturalist Maritimes Butterfly Records. iNaturalist.org and iNaturalist.ca.
13	Blaney, C.S.; Mazerolle, D.M. 2008. Fieldwork 2008. Atlantic Canada Conservation Data Centre. Sackville NB, 13343 recs.
13	G.Proulx, R. Newell, A. Mills, D. Bayne. 2018. Selaginella rupestris records, Digby Co. Nova Scotia Lands and Forestry, 1387601 recs.
13	Plissner, J.H. & Haig, S.M. 1997. 1996 International piping plover census. US Geological Survey, Corvallis OR, 231 pp.
12	Klymko, J. 2019. Atlantic Canada Conservation Data Centre zoological fieldwork 2018. Atlantic Canada Conservation Data Centre.
12	McKendry, Karen. 2016. Rare species observations, 2016. Nova Scotia Nature Trust, 19 recs.
12	Whittam, R.M. 1999. Status Report on the Roseate Tern (update) in Canada. Committee on the Status of Endangered Wildlife in Canada, 36 recs.
10	Boyne, A.W. & Grecian, V.D. 1999. Tern Surveys. Canadian Wildlife Service, Sackville, unpublished data. 23 recs.
10	Cameron, R.P. 2018. Degelia plumbea records. Nova Scotia Environment.
10	Craik, Shawn. 2019. Roseate tern breeding observations from 2017 - 2019. Université Saint-Anne, 10 records.
10	McNeil, J.A. 2017. Eastern Ribbonsnake (Thamnophis sauritus) sightings, 2017. Mersey Tobeatic Research Institute, 36 recs.
10	Nova Scotia Nature Trust. 2013. Nova Scotia Nature Trust 2013 Species records. Nova Scotia Nature Trust, 95 recs.
10	Porter, C.J.M. 2014. Field work data 2007-2014. Nova Scotia Nature Trust, 96 recs.
10	Richardson, D., Anderson, F., Cameron, R, Pepper, C., Clayden, S. 2015. Field Work Report on the Wrinkled Shingle lichen (Pannaria lurida). COSEWIC.
10	Smith, T.W. 2009. Eleocharis tuberculosa records in Yarmouth, Shelburne Count. COSEWIC. Pers. comm. to D.M. Mazerolle, 10 recs.

# recs	CITATION
9	deGooyer, K. 2019. Snapping Turtle and Eastern White Cedar observations. Nova Scotia Environment.
9	MacKinnon, D.S. & Maass, O.C. 1996. Fieldwork 1996. Dept Natural Resources, Parks Division, 9 recs.
9	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
9	O'Grady, Sally. 2010. Piping Plover Nesting in Kejimkujik Seaside Annex, 2008-10. Parks Canada, 9 recs.
9	Parks Canada. 2010. Specimens in or near National Parks in Atlantic Canada. Canadian National Museum, 3925 recs.
9	Patrick, Allison. 2021. Animal and plant records from NCC properties from 2019 and 2020. Nature Conservancy Canada.
9	Sollows, M.C,. 2008. NBM Science Collections databases: mammals. New Brunswick Museum, Saint John NB, download Jan. 2008, 4983 recs.
8	Basquill, S.P. 2003. Fieldwork 2003. Atlantic Canada Conservation Data Centre, Sackville NB, 69 recs.
8	Blaney, C.S. 2020. Sean Blaney 2020 field data. Atlantic Canada Conservation Data Centre, 4407 records.
8	Bryson, I.C. 2020. Nova Scotia flora and lichen observations 2020. Nova Scotia Environment, 139 recs.
8	Cameron, R.P. 2013. 2013 rare species field data. Nova Scotia Department of Environment, 71 recs.
8	Neily, T.H. & Pepper, C.; Toms, B. 2018. Nova Scotia lichen database Update. Mersey Tobeatic Research Institute, 14 recs.
8	Neily, T.H. 2010. Erioderma Pedicellatum records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
8	Pepper, C. 2021. Rare bird, plant and mammal observations in Nova Scotia, 2017-2021.
8	Wood, E.W. 2011. Sabatia kennedyana locations in Nova Scotia. Pers. comm. to C.S. Blaney. Gray Herbarium, Harvard University, 8 recs.
7	Bateman, M.C. 2001. Coastal Waterfowl Surveys Database, 1965-2001. Canadian Wildlife Service, Sackville, 667 recs.
7	Misc. rare species records gathered by NSDNR staff or communicated to NSDNR and forwared to ACCDC
7	Neily, T.H. 2019. Tom Neily NS Bryophyte records (2009-2013). T.H. Neily, Atlantic Canada Conservation Data Centre, 1029 specimen records.
6	Belliveau, A. 2013. email to Sean Blaney regarding Listera australis observations in SW Nova Scotia. Mersey Tobeatic Research Institute, 8.
6	Benedict, B. Connell Herbarium Specimens (Data) . University New Brunswick, Fredericton. 2003.
6	Toms, Brad. 2011. Species at Risk data from 2011 field surveys. Mersey Tobeatic Research Institute, 17 recs.
5	Blaney, C.S. 1999. Fieldwork 1999. Atlantic Canada Conservation Data Centre. Sackville NB, 292 recs.
5	Keddy, C. 1986. Status report on the eastern mountain avens, Geum peckii, in Canada Ottawa, Ontario, Canada: Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
5	Layberry, R.A. 2012. Lepidopteran records for the Maritimes, 1974-2008. Layberry Collection, 1060 recs.
5	Newell, R.E. 2002. A Botanical Survey of the Sand Pond National Wildlife Area. , 12 recs.
5	Rothrock, P. 2002. Carex longii in NS. Taylor University, Pers. com. to L. Benjamin, forwarded to S. Blaney. 5 recs.
5	WIlliams, M. Cape Breton University Digital Herbarium. Cape Breton University Digital Herbarium. 2013.
4	Belliveau, A.G. 2019. Maleberry (Lyonia ligustrina) count at Long Lake, Yarmouth Co., NS. E.C Smith Herbarium, Acadia University, Wolfville NS, 4 records.
4	Cameron, R.P. 2009. Nova Scotia nonvascular plant observations, 1995-2007. Nova Scotia Dept Natural Resources, 27 recs.
4	Christie, D.S. 2000. Christmas Bird Count Data, 1997-2000. Nature NB, 54 recs.
4	e-Butterfly. 2019. Export of Maritimes records and photos. McFarland, K. (ed.) e-butterfly.org.
4	Klymko, J.J.D. 2018. 2017 field data. Atlantic Canada Conservation Data Centre.
4	Newell, R.E. 2006. Rare plant observations in Digby Neck. Pers. comm. to S. Blaney, 6 recs.
4	Robinson, S.L. 2011. 2011 ND dune survey field data. Atlantic Canada Conservation Data Centre, 2715 recs.
3	Basquill, S.P. 2009. 2009 field observations. Nova Scotia Dept of Natural Resources.
3	Basquill, S.P., Porter, C. 2019. Bryophyte and lichen specimens submitted to the E.C. Smith Herbarium. NS Department of Lands and Forestry.
3	Bayne, D.M. 2014. 2014 insect field observations.
3	Benedict, B. Connell Herbarium Specimens, Digital photos. University New Brunswick, Fredericton. 2005.
3	Brunelle, P.-M. (compiler). 2010. ADIP/MDDS Odonata Database: NB, NS Update 1900-09. Atlantic Dragonfly Inventory Program (ADIP), 935 recs.
3	Cameron, R.P. 2009. Erioderma pedicellatum database, 1979-2008. Dept Environment & Labour, 103 recs.
3	Canadian Wildlife Service, Atlantic Region. 2010. Piping Plover censuses 2006-09. , 35 recs.
3	deGooyer, K. 2019. Eastern White Cedar observations, Norwood, Nova Scotia. Nova Scotia Environment.
3	Hill, N. 1995. Rare & Uncommon Plants of the Kejimkujic Seaside Adjunct. Biology Dept., Mount Saint Vincent University, 15 recs.
3	Holder, M.L.; Kingsley, A.L. 2000. Kinglsey and Holder observations from 2000 field work.
3	Klymko, J.J.D.; Robinson, S.L. 2012. 2012 field data. Atlantic Canada Conservation Data Centre, 447 recs.
3	Layberry, R.A. & Hall, P.W., LaFontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press. 280 pp+plates.
3	Lock, A.R., Brown, R.G.B. & Gerriets, S.H. 1994. Gazetteer of Marine Birds in Atlantic Canada. Canadian Wildlife Service, Atlantic Region, 137 pp.
3	Olsen, Ervin. 2018. Nova Scotia Atlantic Coastal Plain Flora observations. Halifax Field Naturalists Nova Scotia Nature Archive Facebook Page.
3	Smith, T.W. 2009. Assessment and update status report on the Tubercled Spike-rush (Eleocharis tuberculosa) in Canada. Committee on the Status of Endangered Wildlife in Canada, 3 recs.
3	Staicer, C. 2013. Personal communication concerning Hirundo rustica nesting in and around Kejimkujik NP, NS. Pers. comm.
2	Adams, J. & Herman, T.B. 1998. Thesis, Unpublished map of C. insculpta sightings. Acadia University, Wolfville NS, 88 recs.
2	Austin-Smith, P. 2014. 2014 Common Nighthawk personal communication report, NS. NS Department of Natural Resources.
2	Benjamin, L.K. 2002. Rare plant observations by P. MacDonald, P. Mills, S. Eaton, H. MacKinnon, B. Colpitts at Sloans Lake, NS. Pers. comm. to L.K. Benjamin, NSDNR, with P. MacDonald, 3 recs.
2	Brunelle, P.-M. 2009. NS Power odonata records for Mersey, Tusket & Sissiboo systems. Nova Scotia Power, 218 recs.
2	Clayden, S.R. 1998. NBM Science Collections databases: vascular plants. New Brunswick Museum, Saint John NB, 19759 recs.
2	Clayden, S.R. 2005. Confidential supplement to Status Report on Ghost Antler Lichen (Pseudevernia cladonia). Committee on the Status of Endangered Wildlife in Canada, 27 recs.
2	Edge, Thomas A. 1984. Status report on the Atlantic Whitefish (Coregonus huntsmani). Committee on the Status of Endangered Wildlife in Canada.
2	Elderkin M.F. 2007. Selaginella rupestris, Iris prismatica & Lophiola aurea records in NS. NS Dept of Natural Resources, Wildlife Div. Pers. comm. to C.S. Blaney, 3 recs.
2	Goltz, J.P. & Bishop, G. 2005. Confidential supplement to Status Report on Prototype Quillwort (Isoetes prototypus). Committee on the Status of Endangered Wildlife in Canada, 111 recs.

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2	Hope, P. 2002. Field survey of Goodyera pubescens population at Kejimkujik National Park. Kejimkujik National Park, 3 recs.
2	Klymko, J. Univeriste de Moncton insect collection butterfly record dataset. Atlantic Canada Conservation Data Centre. 2017.
2	Klymko, J.J.D. 2011. Insect fieldwork & submissions, 2010. Atlantic Canada Conservation Data Centre. Sackville NB, 742 recs.
2	Klymko, J.J.D. 2016. 2015 field data. Atlantic Canada Conservation Data Centre.
2	Majka, C.G. & McCorquodale, D.B. 2006. The Coccinellidae (Coleoptera) of the Maritime Provinces of Canada: new records, biogeographic notes, and conservation concerns. Zootaxa. Zootaxa, 1154: 49–68. 7 recs.
2	Marx, M. & Kenney, R.D. 2001. North Atlantic Right Whale Database. University of Rhode Island, 4 recs.
2	McMullin, Troy. 2021. Anzia colpodes observations near Kejimkujik National Park. Canadian Museum of Nature.
2	McNeil, J.A. 2019. Snapping Turtle records, 2019. Mersey Tobeatic Research Institute.
2	Ogden, J. NS DNR Butterfly Collection Dataset. Nova Scotia Department of Natural Resources. 2014.
2	Olsen, R. Herbarium Specimens. Nova Scotia Agricultural College, Truro. 2003.
2	Phinney, Lori; Toms, Brad; et. al. 2016. Bank Swallows (Riparia riparia) in Nova Scotia: inventory and assessment of colonies. Merset Tobeiatc Research Institute, 25 recs.
2	Proulx, V.D. 2002. Selaginella rupestris sight record at Centreville, Nova Scotia. Virginia D. Proulx collection, 2 recs.
2	Sollows, M.C. 2008. NBM Science Collections databases: herpetiles. New Brunswick Museum, Saint John NB, download Jan. 2008, 8636 recs.
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